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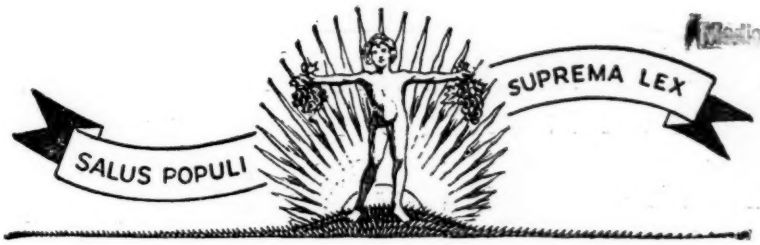

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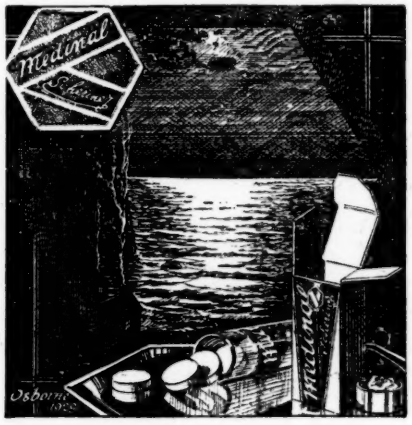

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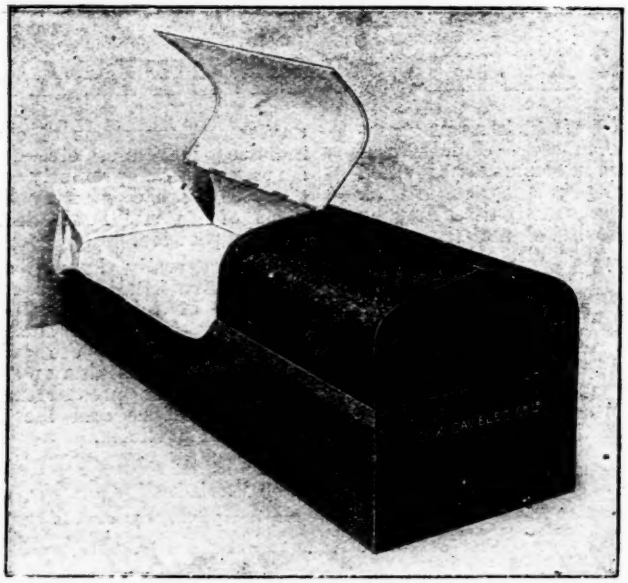

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A British Medical Association Lecture
ON
RHEUMATISM IN CHILDREN.

DELIVERED BEFORE THE DUNDEE BRANCH,
FEBRUARY 5TH, 1929,

BY

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THE reawakening of interest in the subject of rheumatism has been a striking feature of medical history in this country during the past five years. The investigations that had previously been undertaken with characteristic vigour by the American Heart Association were no doubt a factor in the process, but since 1923, when Poynton (who has been an enthusiastic worker on this subject for over a quarter of a century) published a plea for the prevention of rheumatic heart disease, this matter has been constantly before the profession.

The special committee of the British Medical Association appointed to inquire into this subject can also claim some credit for the renewed interest, and in its published reports has helped not a little to clarify the situation and to point the way to further methods of advance. The chief medical officer of the Board of Education in England has repeatedly emphasized the importance of the subject in his annual reports. The Medical Research Council, the Section of Diseases of Children of the British Medical Association, the Society of Medical Officers of Health, the Child Welfare Section of the Sanitary Institute Congress, and the Society of School Medical Officers of Scotland, in addition to numerous Divisions and Branches of the British Medical Association, have all had the matter under discussion. The experiments in after-care carried out by the Invalid Children's Aid Association in their heart homes, and by others in different parts of the country, notably in Birmingham, have demonstrated what can be done in the direction of limiting the devastation of this serious disease.

When one looks up the subject of acute rheumatism or rheumatic fever in some of the older books, description is found of an affection of the joints, which are red, swollen, and painful, exquisitely tender so that even a touch on the bed is feared, usually associated with fever, sweating, and malaise, and with, as a possible complication, heart disease. The description when applied to the adult may be correct, but when transferred to the child is apt to leave a very erroneous impression. The more the disease is studied in the child, the more it is realized that rheumatism is a general infection, of which after all the joint condition is in essence a minor manifestation. The latter is eminently curable, leaves no deformity, and were the disease so limited one would not be so much concerned with its high incidence among the population of this country. In the child the joints seldom occupy the prominent place that they do in the picture of the adult disease, while the heart less rarely escapes from the effect of the general infection.

There may be different explanations offered as to the special susceptibility of the heart in the child, but comparatively recent investigations by Gross and his collaborators in America into the vascularity of the heart afford a possible clue to the problem. It is now generally accepted that rheumatism in the heart is brought to it by the coronary circulation, and not by the blood passing through its cavities. In the child, and for a variable period in adult life, there is a blood supply which can be demonstrated right into the cusps of the various valves. This vascularity tends to disappear first from the arterial valves, and later from the auriculo-ventricular valves, the last cusp to lose its blood supply being the aortic cusp of the mitral valve. It is very suggestive in this connexion that the mitral valve is more frequently involved than the aortic valve, and the cusp more severely damaged as a rule over a series of cases will be found to be the aortic cusp of the mitral. Another point that must be clearly realized at the outset is that rheumatism in its first attack is essentially a disease of childhood. The highest peak of incidence varies slightly, according to different observers, from the seventh to the tenth year of life, the vast majority of primary attacks of rheumatism taking place before the age of 15. When once rheumatism has affected the heart, particularly the valves, it is found that vessels persist in the valves for a much longer period than in healthy hearts, so that in hearts once damaged, even to a slight extent, subsequent attacks of rheumatism are more prone to produce further damage, even in adult life, than in patients who had not had an attack in childhood. If any good, therefore, is to be done towards lessening the prevalence of heart disease, steps must be taken to circumvent the infection in the child. If, with our present knowledge, it is impossible to prevent rheumatism by the study of the disease in the child, it may still be possible to prevent relapses and to lessen the number of cardiac cripples. The aim of anyone interested in this subject must therefore be (1) to determine as far as possible the conditions which produce or predispose to the infection, and (2) to acquire a knowledge of the earliest manifestations which may indicate the presence of the disease. With our present knowledge of the natural history of rheumatism this may be an ideal difficult to attain; this should not hinder the attempt but rather stimulate to further effort.

PREDISPOSING OR EXCITING FACTORS.

Much uncertainty still exists as to the factors which predispose to rheumatic infection. In inquiring into the family history of cases of children suffering from rheumatism, a history is obtained of parents, brothers, or sisters who have been similarly affected in about as great a proportion as is found in the case of tuberculosis, so that the question of heredity in some degree cannot be lightly dismissed. Many believe, and with considerable ground for their opinion, that some children are born with a special liability to acquire rheumatic infection. That children have been born actually suffering from rheumatic endocarditis has been demonstrated, though so rarely as to be hardly worthy of serious consideration in this connexion. Some have gone so far as to suggest that alteration in the balance between the various ductless glands, notably the thyroids, adrenals, and pituitary, has been the basis of the tendency which has been inherited; and there is certainly in many rheumatic children a nervousness and a tendency to tachycardia that make one hesitate before dismissing lightly such a possibility. Such questions, however, have comparatively little practical application, except in so far as helping one generation may be a means of lessening the incidence of rheumatism in the next.

No one, I think, doubts that environment plays an important part in the incidence of this disease, and while statistical evidence as regards dampness is rather contradictory, the spot maps of certain towns in England where a careful inquiry into this question has been carried out are very difficult to explain on any other basis than that dampness in dwellings is a potent factor in predisposing to the disease. Poynton is confident that the rheumatic child fares badly in such surroundings, and that there is a tendency for the rheumatism in such circumstances to become intractable. He states, "I have seen too many examples to be disturbed by any statistics on this point." In addition to the dampness of dwellings, dampness of clothing and footwear should also be considered. These certainly have a direct influence in promoting catarrhal affections, particularly of the nasopharynx. Further, social status apparently plays a part, though the exact factor therein is not obvious. The elementary council or board school provides a much greater percentage of cases than the average boarding or private school.

Sources of Infection.

With regard to the actual infection, little more need be said than that the disease seems undoubtedly to be due to infection of some kind, but that there is still no uniformity of opinion as to whether the micrococcus of Poynton and Payne, or some other organism or symbiosis of organisms, is the exciting factor. Apart from knowledge of the actual

organism, attempts have been made to determine its site of entry into the body, and the one which gains most support is the tonsil. The teeth have also come under suspicion, but with less ground, while some believe that the intestine may harbour the organism after its entry. The results of enucleation of the tonsils have been more or less unsatisfactory. Some of the latest investigations along this line show that relapses are as frequent in the operated as in the non-operated cases. Miller's figures, however, seem to show that removal of the tonsils lessens the liability to rheumatic joint relapses, and that patients who do relapse afterwards usually manifest the infection in the form of chorea. That enucleation of the tonsils is not a preventive against relapses cannot, of course, be used as an argument against their being the site of primary infection, because it is well recognized that once the infection gains entry to internal organs its eradication is a much more difficult problem.

While the last word has not been written on any of these factors, experiments have been carried out over a sufficiently long period, both in this country and in America, to warrant the view that improvement in environmental conditions can affect for the better the prospects of the rheumatic subject.

EARLY MANIFESTATIONS.

Cardiac Rheumatism.

Apart from the comparatively few cases of congenital heart disease, there is no common affection of the heart in childhood except rheumatism, and it should be recognized that the heart may be the first part to show signs of the infection. Mitral stenosis is usually accepted as a typically rheumatic manifestation, and yet in a series of hospital cases with this lesion over a period of ten years 25 per cent. of the males and 31 per cent. of the females gave no history of antecedent rheumatic manifestation. In many of these cases the heart had been quietly damaged without other sign of the disease, for all patients could not have forgotten other symptoms of rheumatism.

We frequently speak of endocarditis, or of pericarditis, but it may be accepted that in neither case does the myocardium escape. The effect which should be sought in this connexion is enlargement of the heart as made out by percussion. We are too apt to ascribe all changes in the size of the heart to pressure effect, but the dilatation is really more dependent on the extent of muscle damage than on the degree of valvular lesion. Likewise in pericarditis with effusion the increase in dullness, which is often ascribed to the fluid, is in many cases due chiefly to the dilated heart. Dilatation of the heart in a child subject to even suspicious rheumatic manifestations would warrant the assumption that the heart was already in the grip of the rheumatic poison. Dilatation of the heart is really the most reliable early sign in a child, as characteristic lesions which would allow one to diagnose valvular involvement, such as mitral stenosis or even aortic incompetence, do not necessarily present themselves early in the disease. Mitral stenosis particularly may take some years before it develops characteristic physical signs. The presence of a systolic murmur at the apex is perhaps one of the most difficult to assess. In the absence of any dilatation of the heart it can usually be neglected if it is the only sign, but in association with dilatation of the heart it is presumptive evidence that the mitral valve is also affected. An aortic systolic murmur is much less common as an early indication of heart involvement, and is rarely present without a diastolic murmur of aortic incompetence as well. The heart rate, in the absence of auriculo-ventricular block, is usually accelerated, but taken as a solitary sign is not of much value in determining implication of the heart, as so many other causes in the young child can produce the same increased frequency. This sign, however, cannot be neglected, and in the absence of any other cause for acceleration, should be reckoned a suspicious feature. Disorder of rhythm in the child is not common. Auricular fibrillation is rare under 15 years of age; heart-block, however, may occur during the acute stage and may be a transient feature. The presence of extra-systoles, generally infrequent in childhood, would suggest some toxaemia.

Mackenzie indicated that the respiratory type of sinus irregularity could be considered as a sign that the heart had escaped. This view is not now generally accepted. Sinus irregularity is not common with a rapid heart action, and consequently its reappearance may be expected if the heart rate becomes slow. This is probably its only significance, as it has been found in association with such a definite muscle lesion as heart-block.

I have purposely placed cardiac rheumatism first on the list, not only on account of its very great intrinsic importance, but because in the child the heart very rarely completely escapes, and also to emphasize the fact that it may be the first part to show signs of the disease.

According to a recently published statistical inquiry covering 500 children in a New York cardiac clinic, the heart was the first part to be affected in 6 per cent. of the patients. Furthermore, some figures which have recently come to light in connexion with disordered action of the heart—irritable heart—suggest that rheumatic infection may lead to this condition in the absence of valvular disease. Thus Parkinson found disordered action of the heart in a higher percentage of cases in men with a rheumatic history without valvular disease than in those with no rheumatic history.

Any of the above signs have a much greater significance when found in association with other typical rheumatic manifestations, and we may now proceed to consider some of these.

Polyarthritis.

Articular rheumatism is the commonest condition, or at least the commonest to be recognized, antecedent to cardiac infection. In the New York series it occurred in 66 per cent. and was the earliest manifestation in 40 per cent. In many cases, of course, there were relapses from one to five times. The diagnosis of these cases presents little difficulty.

Growing Pains.

This is the group to which I would like specially to direct attention. That it is in most cases in the nature of a true rheumatic manifestation seems undoubted. In the New York series it occurred in 67 per cent. of the cases and was the first manifestation in 27 per cent. It should be noted that in 10 per cent. carditis followed without any other polyarthritis or chorea. Until growing pains are considered as worthy of medical treatment, both by the doctor and the parent, many cases will be allowed to drift into the state of cardiac cripples.

Tonsillitis.

It is difficult to present valuable figures for this condition in its relation to heart disease. That tonsillitis is a frequent accompaniment of other definite rheumatic features, that diseased tonsils are more frequent in rheumatic than in other subjects, and that attacks of tonsillitis often accompany or usher in relapses, is undoubted. It was the first manifestation in 14 per cent. of the New York series. Unfortunately the removal of tonsils may also be immediately followed by rheumatic symptoms.

Chorea.

Apart from the chorea which was a feature of lethargic encephalitis at one period of the epidemic, chorea must be considered as rheumatic in origin. It may be the only rheumatic precursor of carditis, and was so in 21 per cent. of the New York series, in which it occurred in 43 per cent. of the cases. It is as frequently followed by severe carditis as is polyarthritis, and its early recognition is important. The fidgety, restless, nervous child requires very special care at school, and it would be an interesting study to determine how much the strain of school examinations is a determining factor in the production of chorea in susceptible children.

Nodules and Other Signs.

I place great stress on the presence of nodules as an aid to diagnosis and treatment. Figures are unreliable, as the nodules must be looked for regularly if their frequency

is to be recognized. Sometimes transient, coming in crops, they are neither painful nor tender, and so may be overlooked. They have a structure similar to that of the submiliary nodules in the heart.

Anaemia, pleurisy, and pyrexia of unknown origin, while also suggestive of tuberculosis, may be early evidence of rheumatic infection.

Clinical Syndromes.

Generally speaking, cases of rheumatic heart disease may be grouped along certain broad lines, as suggested by Poynton. Perhaps the commonest group is associated with polyarthritis, tonsillitis, or growing pains. The second group is that associated with chorea, with or without some of the other manifestations. In either of those the heart may be quietly damaged, and the full effect of the lesion may only be manifest after one or more relapses. In another group, more often also associated with polyarthritis, the heart is the seat of pancarditis, the endocardium, myocardium, and pericardium being involved, and the patient may be very seriously ill from the onset. In still another group without other rheumatic manifestations the heart may be quietly damaged.

Relapse.

This is a well-known feature, and as succeeding attacks rarely fail to increase the cardiac damage, attention to them, or, if possible, their prevention, may do much to lessen the cardiac effects. In the New York series 70 to 85 per cent. of the patients relapsed, the largest figure being found in those in whom the initial attack occurred in very early life. The relapse may be within a year, or delayed for several years. In half the cases in this series the first relapse occurred within one year; in two-thirds within two years; in four-fifths within three years, and in the remainder up to ten years. The susceptibility to infection decreased after the age of 12.

TREATMENT AND SUPERVISION.

In treatment of the rheumatic infection in childhood time and patience are all-important factors, and it is to inability to secure these from all the parties concerned that many of the failures must be ascribed.

The salicylates, while potent in relieving symptoms and fever in joint cases, seem to fail when the heart or brain is involved. Not only so, but some would argue that the rapid amelioration of symptoms in joint cases induces a false sense of security, so that sufficient time is not allowed for the heart to recover its tone. When the heart is actually the seat of infection salicylates seem to be of little value, and relapses of fever are about as frequent with salicylates as without them.

Rest in bed should be demanded till all signs of activity have passed, and for some time thereafter. Fever and pain are definite and easily appreciated indications for rest, but, in their absence, nodules or tachycardia are equally significant. When it is decided to allow the patient to get up the heart rate should be carefully watched, and any undue acceleration accepted as an indication for more rest. Later, gradually increasing exercise, with the same precaution, is of value. Iron and cod-liver oil help to restore vigour to the cardiac muscle, and should be continued for some time. Experience shows that for many of the cases prolonged convalescence, under good hygienic conditions, with fresh air and sunshine, is necessary.

The problem with which we are faced in trying to deal with rheumatic heart disease hinges on the difficulty of securing lengthy treatment. The public (medical and lay) have been educated to face prolonged treatment in tuberculosis, but not yet in rheumatism. Heart disease kills annually as many as tuberculosis, and, like it, the rheumatic type kills early. Looked at as an economic problem rheumatism deserves as much consideration as tuberculosis, but, of course, the question of isolation does not arise in the same way, and so a good argument is lost.

For the well-to-do the doctor and parents can, if alive to the need, secure the necessary treatment; but rheumatic heart disease is more common in a grade of society that cannot readily face such a course. The hospitals obviously cannot at present provide beds for the lengthy residence that is very often required. The hospital convalescent homes are suitable neither in size nor arrangement to deal with those cases. The British Medical Association subcommittee put forward a plea for the establishment of special residential hospital schools or homes, and the Medical Research Council, in no uncertain words, argues on similar lines: "The plain need for organized after-care offers an urgent but soluble problem of preventive medicine, too long neglected, and every motive of humanity and wise economy should impel the community to provide the after-care as rapidly as possible."

All cases, of course, are not suitable for such homes—for instance, advanced or acute cases. But there are the children who have just passed through an attack of arthritis, chorea, or carditis, or very mild or even potential cases, or quiescent cases, for whom the strain of ordinary school life is too great. The Birmingham people, as a result of the earlier years' working, have had the accommodation doubled, and all reports are favourable as to the value to the patients. Until such places are available, and even afterwards, much remains to be done. All rheumatic children need special and regular supervision, and it seems to me that only by co-operation between practitioners, ante-natal clinic workers, school medical officers, and hospitals, will this be efficient, as first manifestations may be observed by any one of them.

The Rheumatism Clinic.

My own feeling is that any scheme on the lines adopted at Paddington Green under Dr. Reginald Miller serves a useful purpose. Attached to the hospital is a supervisory centre where all known rheumatic children are asked to attend. A temporary scheme of notification is adopted so that the medical officer of health can also give his help. Patients attending are carefully recorded and registered. Any line of treatment considered necessary is recommended only, and is carried out by the family doctor or the hospital, as is considered best. Children who would benefit by country residence are recommended to the care of the Invalid Children's Aid Association.

Another very useful function of such a centre is that of education. The parents are provided with a card giving general instructions on the care of rheumatic children. Similar instructions have been given in other parts of the country through the school medical officers whenever a case presented itself at the routine examination. Education of school nurses and teachers has also an important place in any scheme, as these can often detect early cases of chorea or other features of ill health before the doctor is called in.

The essential feature of any such scheme is that there must be co-operation between the various bodies concerned. No patient should be dismissed from hospital without information being sent to the practitioner or rheumatic centre, and, if fit for school, to the school medical officer. Similarly, cases seen at school should be notified to the practitioner or centre for supervision, while there should be ready access to hospital for patients requiring special care. The function of the centre would naturally be that of co-ordinating and supervising.

To make any impression on the incidence of rheumatic heart disease the problem must be faced from the aspect of rheumatism in childhood. At that stage alone is there any hope. The treatment of auricular fibrillation is often an eminently satisfactory piece of work, but, after all, it is only a patched-up job. To prevent relapses in a child, or, better still, to prevent rheumatism, is to save lives.

Even without a complete knowledge of all the facts of the natural history of this disease much good can be done now by: (1) Education of all in touch with child life—parents, teachers, nurses, doctors—in the early manifestations, the best plan to combat them, and the risk of neglect. (2) Prolonged care, by the doctor, of the child who has been attacked until all signs of activity have ceased. (3) Prolonged after-care in suitable surroundings for those who are recovering. (4) Constant supervision to detect the early signs of ill health, or of relapses.

THE INFLUENZA EPIDEMIC OF 1918:

COLOUR OF THE BLOOD IN FATAL CASES.

BY

J. S. HALDANE, C.H., M.D., F.R.S.

ONE of the most striking facts about the world-wide and extraordinarily fatal epidemic of "influenza" in 1918 was that in the bad cases one of the symptoms was a peculiar blue or violet form of cyanosis. At the time this cyanosis was attributed to broncho-pneumonia; but against this explanation was the fact that administration of oxygen failed to abolish or diminish the cyanosis, whereas in the cyanosis which sometimes accompanies ordinary lobar pneumonia, or the lung inflammation of poisoning by irritant gas, the cyanosis can usually be abolished easily by adding some oxygen to the inspired air.

In a paper published in the *British Medical Journal* of August 1st, 1925 (p. 187), on the presence post mortem of nitric-oxide-haemoglobin, by Dr. Banham, Dr. Savage, and myself, a fatal case of broncho-pneumonia (mistaken at first for carbon monoxide poisoning) was described, in which the blood was found to be everywhere red post mortem, and to give certain of the usual tests for CO-haemoglobin, although the patient was cyanosed just before death, and had not been exposed to carbon monoxide at all. The red colour was evidently due to NO-haemoglobin, which appears post mortem in poisoning by nitrite,[1] while the cyanosis during life was due to the fact that in poisoning by nitrite methaemoglobin is formed, producing practically the same colour in the blood as ordinary cyanosis due to reduced haemoglobin.

In this paper we mentioned the fact that Dr. Banham, when in command of the medical section of the military hospital at Cannock Chase during the war, had repeatedly observed that in the bodies of those who died in the 1918 influenza epidemic the blood was red on exposure post mortem. He had also made a special report on the subject to the War Office.

Since our paper was written I have received information from the doctors and nurses who saw the bodies in fatal cases, both in this country and in France; and they confirm Dr. Banham's experience that the blood was red post mortem, though cyanosis was present during life.

It thus appears to be at least extremely probable that the organism responsible for the very fatal character of the 1918 epidemic was a nitrite-forming organism, and that the main immediate cause of death was anoxaemia due to conversion of oxyhaemoglobin into methaemoglobin. In fatal nitrite poisoning in animals the immediate cause of death is anoxaemia.

Although nitrite-forming organisms are familiar to soil microbiologists, very little, if any, attention has hitherto been given to pathogenic organisms of a similar character. Apart from the 1918 influenza epidemic I have heard of several fatal cases of broncho-pneumonia in which deep cyanosis, probably due to methaemoglobin, was present. It is probable, therefore, that such cases are not very rare, even in the absence of an epidemic of them.

I have written this paper in the hope that some case of this kind may be diagnosed clinically or post mortem, and a proper bacteriological investigation made. It is easy to detect methaemoglobin clinically in a drop of blood, and equally easy to recognize nitric-oxide-haemoglobin post mortem. It seems, however, that unless there is any suspicion of carbon monoxide poisoning not much attention is usually paid at post-mortem examinations to the colour of the blood.

REFERENCE.

[1] Haldane, Makgill, and Mavrogordato: *Journ. of Physiol.*, xxi, 1897, p. 160.

TREATMENT OF PRURITUS ANI AND ANAL FISSURE:

THE USE OF ANAESTHETIC SOLUTIONS IN OIL.

BY

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FROM a practical point of view cases of pruritus ani may be divided into two main groups:

1. The group in which some definite local cause is present. This is usually some lesion which causes an abnormal amount of perianal moisture; amongst the commoner of these may be mentioned prolapsing piles, external piles, fissure, fistula, hypertrophied papillae, rectal polypi and tumours, threadworms, proctitis, etc. Treatment of cases in this group, if limited to removing the exciting cause, together with treatment of the perianal region with simple lotions and powders, is usually effective.

2. The second group is that in which patients complain of persistent severe itching, but examination reveals none of the obvious causes enumerated above. The rectum is smooth, and examination, as a rule, is negative, except that some evidence is found to confirm the patient's complaint of irritation. The perianal skin is often somewhat thickened and thrown into rugae radiating from the anus, with a varying amount of excoriation of the skin or fissuring.

It is cases in this second group which are the great problem as regards treatment. It is probable that a chronic neuritis of the sensory nerves in the anal region is present in most cases of long duration, and hitherto the recognized treatment of cases which have failed to respond to local treatment of the dermatitis has been either (1) operation—Ball's operation or any of the various modifications designed towards sectioning the cutaneous nerves of the anus; (2) the subcutaneous injection of various solutions such as absolute alcohol, quinine-urea, hydrochloric acid, etc.; (3) *x*-radiation.

After working for the last eight years in the out-patient department of St. Mark's Hospital, I have been impressed with the unsatisfactory results generally obtained by these methods. Judging from the number of patients who attend who have previously had one or more courses of *x*-ray treatment, the conclusion is forced upon one that the relief obtained, if any, is often of short duration, and the necessity for repeated courses of *x* rays is dangerous. *X*-ray dermatitis and *x*-ray carcinoma of the anus are well-known catastrophes. As regards Ball's operation, it is true that, if properly done, patchy anaesthesia results at once in the flaps outlined by the operation, but it seldom lasts more than a few months; the extensive wound never heals by primary union, and although there may be relief for a time, the irritation often returns after a few months. There is then quite often the added trouble that an atrophic condition of the skin flaps is liable to develop; the perianal skin within the two curved incisions appears thin, shiny, and discoloured, often with patchy excoriation; this may be partly a trophic condition from section of the sensory nerves, and partly due to the impaired vascular supply; it is, I think, a serious objection to Ball's operation.

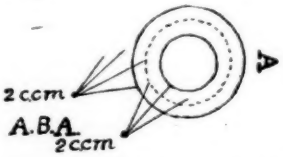
Pruritus being essentially a local condition, it is reasonable to expect a local treatment to relieve it, and subcutaneous injection of an anaesthetic solution appeals to me as being a sensible method likely to succeed. I was therefore greatly attracted by the report of Drs. Yeomans, Gorsch, and Mathesheimer[1] on the use of benacol in the treatment of pruritus ani. This solution was introduced to me last autumn by Dr. Frankfeldt of New York, who very kindly provided me with a supply for trial at St. Mark's. To quote Dr. Yeomans: "Benacol is a solution of equal parts of para-amino-benzoyl-benzoate and phenmethylol in 90 parts of rectified sweet almond oil. It is non-toxic, highly anaesthetic, moderately antiseptic, and, as far as investigated, has a mild depressant action on peripheral nerve endings."

The use of an oily as opposed to an aqueous solution would appear to be particularly valuable as a method of delaying absorption of the local anaesthetic, and therefore

of extending the duration of its action. As an alternative solution to benacol, I have tried and found equally satisfactory a solution known as "A.B.A.," prepared for me by Messrs. Allen and Hanburys, which is now available. A.B.A. is a 3 per cent. solution of anaesthesin with benzyl alcohol 5 per cent. and ether 10 per cent. in sterilized olive oil.

Method of Injection.

The contents of an ampoule of benacol or A.B.A., previously warmed by immersion in hot water, in order to render it more fluid, are drawn into a 2 c.cm. Record syringe. A fine hypodermic needle is attached, and the solution is injected subcutaneously in a fan-shaped manner around and up to the anal margin. The first injection is usually made under the area of maximum irritation. Two ampoules (4 c.cm.) can safely be injected at a time. The injections are usually repeated at intervals of three to seven days until the entire perianal region has been injected, when areas of continued irritation can then be reinjected. I make a practice of charting the injections in a diagrammatic manner (see diagram), which renders it easy to see at a glance the regions that have been injected.



Method of charting injection of left posterior quadrant.

Results.

A slight burning pain has been complained of by some patients either during the injection or some hours later. There has been no general reaction and no complication (particularly inflammation or sloughing of skin) has occurred. No medicinal treatment (bromides, etc.) has been given to any of these patients, and only the simplest applications have been made to the local dermatitis. Sixteen cases have been treated since September, 1928—7 females, 9 males. The irritation in 10 may be classified as severe, in 6 as moderate. The number of sessions has varied from one to six, and the greatest amount of benacol or A.B.A. that any one case has yet received is 22 c.cm., the average being 8 c.cm. It is too soon as yet to speak of "cure," but all of these patients have been relieved, and 8 have been so much improved that they are now practically free from all symptoms. In at least 4 cases with severe dermatitis the visible improvement in the perianal skin has been most dramatic.

The three following cases may be described as examples of the favourable results that have been obtained.

Case 1.—An unmarried woman, aged 28, had suffered from severe pruritus ani, for which Ball's operation was done in February, 1928. Irritation and pain returned as badly as ever within a few months. When seen in September, 1928, she presented a severely excoriated condition around the anus, with numerous fissures. One ampoule of benacol was injected at weekly intervals for four weeks, with immediate improvement; the slightly indurated skin and bright red hyperaemia round the anus was replaced by smooth, pale skin, the fissures healed, and the patient expressed herself as delighted with the improvement. A fifth and last injection was given in November, 1928; she was seen at intervals, and was finally discharged free from symptoms in March, 1929.

Case 2.—A married woman, aged 45, with severe pruritus ani of ten years' duration. She was treated for eighteen months as an out-patient at St. Mark's, with lotions and powders, with no ultimate relief. On September 18th, 1928, benacol 4 c.cm. was injected through four punctures, and on September 25th 2 c.cm. of benacol was injected. Immediate improvement resulted, and continued until March of this year, when a slight return of symptoms made a further injection advisable. I therefore injected 6 c.cm. of A.B.A. posteriorly to the anus, this being the site of slight irritation, and the trouble is again quiescent.

Case 3.—A man, aged 30, with pruritus of four years' duration, treated previously by two courses of *x* rays and much local treatment, with no real relief. In January of this year 6 c.cm. of A.B.A. was injected at two sessions, and great relief has been obtained. He now has very little trouble.

ANAL FISSURE.

Spasm of the external sphincter ani is undoubtedly the cause of the chronicity of anal fissures, and hitherto the various methods of treatment advocated have in reality been directed—and rightly so—towards relieving sphincteric spasm. These methods may be classified into: (*a*) those which promote relief of pain and consequently the spasm; (*b*) those which attack the spasm first.

Under the first heading are the following favourite methods: (1) insertion of analgesic ointments such as those containing cocaine, anaesthesin, chloretone, opium, and belladonna; (2) local application to the surface of the fissure of an albumin-coagulating agent such as silver nitrate, mercury perchloride, nitric acid, or ichthyol; (3) injection under the base of the fissure of an anaesthetic solution such as quinine-urea. The second method of treatment includes the old operation of forcible stretching of the sphincter muscle under local or general anaesthesia, and the various degrees of "incision" ranging from partial to complete division of the sphincter.

All of these methods have been useful, but the chief drawback has been their unreliability. The palliative methods have often failed to relieve the sphincteric spasm, and I have several times seen a recent fissure—in spite of treatment—gradually become chronic and undermined, until finally operation has had to be undertaken. The operation of divulsion of the sphincter is often successful, but, on the other hand, I have known cases where the fissure has failed to heal, with return of sphincteric spasm within a few days after the operation. The operation of incision of a fissure is a very excellent one when applied to the chronic undermined fissure, and is usually the only certain method of getting these cases to heal, but no one will deny that the after-treatment is a painful one; the wound takes three to five weeks to heal, and it is a severe operation to undertake for a recent fissure.

In the last eight months I have been using benacol and A.B.A. for the treatment of anal fissures, and as an ambulatory method this promises to cure rapidly a very large percentage of cases. It is, in effect, a combination of the two methods outlined above, and consists in the injection of these solutions into the external sphincter muscle and under the base of the fissure.

METHOD.

For treatment of the usual dorsal fissure the patient lies on his right side and the anus is painted with tincture of iodine. A 2 c.cm. Record syringe is filled with A.B.A., and with a hypodermic needle the skin is punctured one inch behind the anus in the middle line. The left forefinger is passed into the rectum as a guide and the needle is thrust deeply into the sphincter, first on one side of the middle line and then on the other, about three-fourths of a cubic centimetre of A.B.A. being injected into each side. The needle is then partially withdrawn and is directed forwards in the middle line under the base of the fissure where the remainder of the solution is slowly injected. This completes the first treatment, but if desired an application of pure ichthyol to the surface of the fissure may be made. In one case in this series I injected an anterior fissure in a similar manner with success.

A varying amount of pain is complained of during the actual injection, but it is seldom severe. Some cases have had pain three or four hours after the injection, but only in a few very nervous subjects has this late pain been at all marked. In every case of fissure injected great relief has been noted, or even complete absence of pain within the first twenty-four or forty-eight hours after the injection.

When re-examined, between the third and seventh days after injection, the local result is invariably very striking. Sphincteric spasm has usually completely disappeared; the finger is admitted readily without pain and the margins of the anus can be separated in a normal manner. In a number of cases at this stage a sentinel pile, if present, has been excised with scissors without further anaesthesia and without more than a faint sensation being noticed by the patient. Pure ichthyol is applied at this stage to the surface of the healing fissure, and the usual course of events now is for the fissure to be found completely healed about two or three weeks after the first injection, with the patient quite free from any symptoms. I do not consider the presence of a small sentinel pile at the outer end

of the fissure to be a contraindication to the use of this method. The sentinel "pile" is usually a small oedematous tag which on several occasions I have observed to disappear when sphincteric relaxation has been obtained by injection of A.B.A. In other cases the tag has subsequently been excised, either without further anaesthesia or after injection of a few drops of novocain. I believe this method will sometimes prove of value even in the case of an undermined fissure; if the sphincter has been made to relax I see no reason why an undermined tag should not be removed locally and successful healing obtained. In a few cases I have given a second injection of A.B.A., but as a rule the relaxation lasts sufficiently long for the fissure to heal, and the spasm then does not return. In one case, described below, injection of A.B.A. was of particular value in that it allowed adequate examination of the rectum (at first impossible on account of pain) to be performed a week later, when a large fibrous polyp in relation to the upper end of the fissure was discovered and accordingly removed. In no case has there been any history of incontinence from lack of sphincteric tone.

The following cases may be taken as representative of the series.

Case 1.—A married woman, aged 30, with a very painful dorsal fissure of eight weeks' duration. She was given an injection of 2 c.cm. of A.B.A. One week later the sphincteric spasm had disappeared and the fissure had healed. She was discharged fourteen days after the injection.

Case 2.—A married woman, aged 33, had a dorsal fissure with sentinel tag; duration two weeks; the sphincter was very spastic. On February 19th 2 c.cm. of A.B.A. was injected. On February 26th the sphincter was quite lax, and the patient was discharged on March 12th, the fissure being healed, and the sentinel tag had almost disappeared.

Case 3.—A married woman, aged 29, had a dorsal fissure with spastic sphincter and sentinel tag; duration two years. On January 8th 2 c.cm. of A.B.A. was injected. On January 15th her condition was much improved; the sentinel tag was excised without further anaesthesia. On February 5th no symptoms were present, but a superficial crack was still present; 2 c.cm. of A.B.A. was injected as before. On February 12th the fissure had healed; there was no pain or spasm. She was discharged completely healed on February 25th.

Case 4.—A married woman, aged 42. This patient had a chronic dorsal fissure with large sentinel tag and much sphincteric spasm. On March 12th 2 c.cm. of A.B.A. was injected. On March 15th the pain was much less; the sphincter was quite lax, and with a finger a large fibrous polyp in relation to the upper end of the fissure was discovered and readily delivered outside the anus. Novocain was injected at its base, and the polyp excised together with the sentinel tag. On March 26th the anus admitted two fingers readily, and the patient was discharged healed and free from symptoms on April 19th.

To summarize the results: 30 cases from my out-patients' clinic at St. Mark's Hospital and from my private practice have been injected; 18 have been discharged healed, mostly within a period of ten days to three weeks after the injection of A.B.A.; 6 cases remain under treatment. Two cases with indurated fissures were injected with A.B.A., but on further consideration I decided that operation would be more suitable and certain. Finally, 4 cases of recent fissures were injected once, but have not reported for re-examination. So far as I am aware, no patient has had to lie up or discontinue work while under treatment.

Conclusions.

As an ambulatory treatment for pruritus ani the subcutaneous injection of anaesthetic solutions in oil, such as benacol and A.B.A., would appear to be safe, of considerable value, and worthy of extended trial.

In the treatment of recent anal fissures the method described can be promised to effect a rapid and brilliant cure, and this early stage is obviously the best for treatment to be undertaken. In fissures of some duration, relief of pain and healing are likely to be obtained in a considerable proportion of cases.

Reference.

[1] F. C. Yeomans, R. V. Gorsch, J. L. Mathesheimer: *Trans. Amer. Proc. Soc.*, 1927.

TREATMENT OF PELVIC INFLAMMATIONS BY DIATHERMY.*

BY

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THE method of treating pelvic inflammations by a diathermy current passed between electrodes placed back and front may or may not be good, but it is not treatment by heating the pelvic contents. If, during a treatment so administered, a thermometer is placed in the cervical canal, no rise of temperature will be recorded. The method to be described in this paper is one in which the pelvic contents are heated by a high-frequency oscillating current, which is applied by means of an electrode introduced into the cervix or urethra.

The treatment of pelvic inflammations by the diathermy current arose, as will be seen later, out of the method of treating gonococcal infections of the cervix and urethra by this current. Diathermy treatment of cervix and urethra for gonococcal infection was founded upon the known fact that the gonococcus is vulnerable to comparatively slight rises of temperature above the normal temperature of the human body, though whether this is the only factor concerned is open to question. It was known that attempts had been made to free the male urethra from gonococcal infection by means of sounds heated by hot water circulating through them. These attempts failed because the sounds would, of course, not heat the tissues immediately underlying the mucous membrane. These deeper tissues can, however, be heated by a diathermy current to some depth, and it was decided to try the effects of heating them in this way.

Dr. E. P. Cumberbatch, in treating arthritis by diathermy of the joints, had observed that those cases which recovered were always due to gonococcal infection, and that there was no such beneficial effect on other cases of arthritis. As a result, attempts were made to rid the cervix and urethra of gonococcal infection by using the diathermy current, and during 1919 I arrived at the method of heating these tissues by means of metal electrodes introduced into their lumen.

The cervix, being insensitive, can be heated to any required temperature without an anaesthetic, but this, of course, is not so in regard to the urethra. An anaesthetic is undesirable because the patients must be treated as out-patients. The temperature at which the sensation of heat changes to pain is 115° F., and the urethra cannot therefore be heated beyond this without an anaesthetic. Moreover, up to this temperature no inflammatory reaction occurs, and, if it is not exceeded, no pain or discomfort follows the treatment. If it is even slightly exceeded some symptom indicating an inflammatory reaction, such as pain on passing water, will occur on the day following the treatment. No harm results until 131° F. is reached. It seems that the reaction to a temperature up to 115° F. does not set up inflammation, but that an inflammatory reaction begins directly this temperature is passed. As it is necessary in cases of gonococcal infection to treat both urethra and cervix at the same sitting, and inflammation following the treatment is to be avoided, the temperature of 115° F. is taken as the maximum allowable.

It was realized that if this temperature was insufficient the method would fail. There are two factors in the production of the lethal effect on the organism—namely, temperature and time. It was determined empirically that this temperature of 115° F. was sufficient if the length of time during which it was maintained was ten minutes. The number of times the process had to be repeated in the case of gonococcal infection was found to vary considerably, but generally six to eight bi-weekly treatments proved to be sufficient.

The technique now used is as follows: An electrode is introduced into the urethra, and by means of the diathermy current the tissues immediately surrounding the electrode

* Abstract of a communication to the Section of Electro-Therapeutics of the Royal Society of Medicine.

are heated to a temperature which is believed to be 115° F. This temperature is estimated by the patient's own sensation, and is the point where the sensation of heat changes to pain. The insensitive cervix is then treated in a similar manner, the current used to produce the temperature in the sensitive urethra being taken as the standard.

This method of freeing the cervix and urethra from gonococcal infection is very successful; it was first practised nine years ago, and up to the present very few cases refractory to it have been met with. Moreover, I found that in cases of gonococcal arthritis it was necessary to treat the cervix only, recovery of the arthritis then taking place. In 1920 I treated with success cases of arthritis not gonococcal in origin but associated with a cervicitis. In cervicitis due to infections other than gonococcal recovery may be procured and erosions healed, though in such cases a greater number of applications may be required.

French writers on the subject of uterine ionization are always very insistent that direct current applications must never be made if there is any inflammation of the uterine appendages. They state, moreover, that pain in the lower abdomen during such direct current treatments is diagnostic of inflammation of the pelvic organs. Up to the year 1921 I was treating by diathermy cases of cervicitis obtained chiefly from a special treatment centre, and it was obvious that cases of salpingitis would sooner or later arrive. I had treated the cervix in this way both to free it from gonococcal infection and for the effects of this procedure on arthritis, and had noticed that pain in the lower abdomen had occurred during the treatment. This occurred in cases in which other signs of salpingitis were absent. No harm had resulted. However, on September 20th, 1921, a patient came for treatment of vaginal discharge accompanied by definite signs and symptoms of salpingitis.

The patient, aged 31, gave a history of vaginal discharge for many months. Signs and symptoms of salpingitis were present. Gonococci were found in smears of the cervix and urethra. The first application of diathermy was given on September 20th, 1921. After this treatment the patient developed pain in the abdomen, with tenderness and rigidity in the right iliac fossa. Vomiting occurred and the temperature rose to 102° F. The patient was admitted to hospital, where she remained two weeks. By October 4th symptoms had subsided and diathermy was resumed. A week later the discharge was decidedly less, but there was still pain in the lower abdomen and tenderness on deep palpation. On October 14th there was no pain or tenderness. On November 7th, although symptoms of salpingitis had subsided, gonococci were found in abundance in the urethra but not in the cervix. On January 16th, 1922, gonococci were found in the cervix but not in the urethra, and, shortly after this date, treatment was resumed. Applications were made on January 24th and 27th. On February 23rd and March 2nd no gonococci were found in the urethra or cervix. On April 4th they were also absent, there was no discharge, her general health was good, and she appeared to have made a complete recovery. She had then remained free from signs and symptoms of salpingitis for six months from the time when they had first subsided.

In view of this experience I determined in such cases to use a milder degree of heating, hoping thereby that a subsidence of the salpingitis might be produced and that the cervicitis might be satisfactorily treated afterwards. I was at this time familiar with the effects on prostatitis due to gonococcal and other infections of diathermy applied to the prostate by means of a metal electrode introduced into the rectum. Subsidence of pain and frequency of micturition, recovery from arthritis and other metastases, and even recovery of the prostate from the infection were remarkably constant.

The intrapelvic electrode I now use is 1 inch in diameter. It is sheathed in vulcanite except for 1½ inches at the end which is to be in contact with the upper end of the vagina. This end must be rounded so as to give an even distribution of the current on account of the tendency high-frequency currents have of coming off at points or edges. The indifferent electrode used at present is a lead belt, 2½ inches wide, made of one pound of lead (gauge 24 S.W.G.) and fastened by a clip, which also serves for an attachment to the machine. With these electrodes a current of two amperes gives a temperature of 106° F. in the tissues in the neighbourhood of the metal part of the vaginal electrode. How quickly the temperature falls off from one electrode to the other is not known, so that the actual heating of the tubes and ovaries cannot be determined. The treatments last twenty minutes each, and are given twice a week.

The cases about to be tabulated and described were sent for treatment by one of the gynaecologists at St. Bartholomew's Hospital, from Dr. Malcolm Donaldson's department, by Dr. Wilfred Shaw, Mr. Lane Roberts, and Mr. Burt-White, and by Dr. Oldershaw from the Soho Hospital for Women. I am indebted to Dr. Oldershaw for his interest, kindly criticism, and help, and for some of the reports on the late results of the treatment. The total number of patients was 57, but, excluding 4 found unsuitable for treatment, 6 who attended for only one or two treatments, and 6 who received only a short course of treatment, the number may be reduced to 41. Of these, 33 recovered (about 80 per cent.), 6 were partially relieved of their symptoms or relapsed after apparent recovery, and 2 were unrelieved.

When cases are described as recovered it means that: (1) They are relieved of symptoms connected with the pelvic condition. Many of these patients have been complaining of symptoms for a long time, and their frame of mind is such that recovery from pelvic inflammation is not immediately followed by subjective improvement. Pains, discomfort, or headaches are enlarged upon on inquiry as to their present condition. They are regarded as recovered only if they are relieved of those symptoms which can be referred to pelvic inflammation. (2) Their general health is markedly improved. Instead of having a toxic appearance and being worn out from pain and sleeplessness they have the appearance of health, sleep well, and have improved appetite. (3) Physical signs of pelvic inflammation are absent; examination reveals no swelling which is tender on manipulation. Though there may be some thickening or other abnormality which the examining hand can still detect there is nothing which could be considered sufficient to justify the assertion that recovery has not taken place. In some cases, so far as can be ascertained by inspection and palpation, a complete return to normal has occurred. The appearance of the cervix is normal, and the erosion is healed.

The treatment is safe. No harm has ever resulted, except the acute exacerbation of the symptoms referred to as occurring occasionally when treating the cervix. No patient has died under the treatment, and no operation has become necessary as a result of it.

In the following tables the description of each case is necessarily very brief. Ip. indicates the mild heating by

TABLE I.—*Salpingitis of Undetermined Origin.*

Case No.	Remarks.	Treatment.	Results.
50	Tense, tender mass Douglas's pouch, 3 months	Ip. 3	Pain relieved, still tender, operation.
51	Inflamed left appendages. Duration 2 years	Ip. 10, interval 2 months, Ip 9	Recovery. Slightly tender nodule in left fornix.
55	Right tube and ovary inflamed, 3 months	Ip. 12	Recovery. Pregnant.
85	Inflamed right ovary and tube, 18 months	Ip. 12	Recovery. Followed one month.
116	Fluctuating swelling. Cervicitis, 18 months	Cerv. 5. Ip. 3	Recovery.
209	Both tubes enlarged, left is tender	Ip 10	Recovery.
380	Left tube and ovary enlarged and tender	Ip. 10	Recovery.
407	Salpingitis. Cervicitis erosion, 6 to 7 years	Cerv. 4. Ip. 2	Recovery.
441	Salpingitis. Cervicitis erosion, 2 years	Ip. 3. Ions. 11	Recovery.
558	Dry pyosalpinx. Cervicitis, 6 years	Ip. 11	Recovery.
112	Double salpingo-oöphoritis	Ip. 5	Recovery.
108	Tender mass right fornix. Cervicitis	Ip. 15. Cerv. 3	Recovery. Subjective symptoms remain.
433	Tender mass both iliac fossae. Cervicitis and erosion	Ip. 5. Cerv. 3. Ip. 5	Recovery. Subjective symptoms remain.
485	Double salpingo-oöphoritis. Cervicitis and erosion	Cerv. 2)	Recovery; 9 months later well; 7 months preg.
599	Salpingitis and cervicitis	Ip. 12. Ions. 5	Recovery. Relapse of cervicitis.
160	Swelling right tube, less so left. Cervicitis	Ip. 10. Cerv. 5	Recovery. Followed two months.
528	Cervicitis, subsiding salpingitis, left	Ip. 9. Cerv. 3	Recovery.

the vaginal electrode, and cerv. means that the cervix has been especially treated. The total duration of the course of treatments may be roughly reckoned by remembering that the applications are made twice a week.

In Case 441, healing of the erosion was produced by ionization, which in some cases is more effectual or more rapid than diathermy. Of the seventeen cases, twelve have recovered; one had three treatments only, and the result is inconclusive; three made partial recovery, and one had a relapse of the cervicitis.

TABLE II.—*Cases in which Gonococcus was Found.*

Case No.	Remarks.	Treatment.	Result.
395	Salpingitis. G. found	Cerv. 5	Recovery. Observed six months.
162	Fluctuating swelling. G. found in cervix and urethra	Ip. 1. Cerv. 3. Ip. 6	Recovery. Followed one month. No relapse.
540	Arthritis and salpingitis. Aged 8 years	Ip. 8. Per rectum	Recovery. No arthritis, no salpingitis. Followed five months.
165	Appendix. Right tube and ovary removed, tender swelling left fornix	Ip. 5. Cerv. 3	Recovery.
282	Enlarged thyroid and salpingitis. Cervicitis	Ip. 4. Cerv. 8	Recovery. Thyroid not enlarged.
301	General peritonitis 7 months ago with inflammation of tubes and ovaries	Ip. 3. Cerv. 3	Recovery. Followed three months. Five examinations. No Gonococcus found.
223	Gonococcus found in pelvic pus of peritonitis. Pain and tenderness. Rigidity right iliac fossa	Ip. 11	Recovery.

Cases proved to be due to gonococcal infection all made a good recovery after a comparatively short period of treatment. This is nothing more than anyone familiar with the effects of diathermy treatment of gonococcal infections would have predicted, and requires no special treatment.

TABLE III.—*Following Confinement.*

Case No.	Remarks.	Treatment.	Result.
184	Cervicitis 2 years. Tender swelling left fornix	Cerv. 4. Ip. 12	Recovery.
84	Pain 2 years. Both appendages large and tender	Ip. 11	Recovery.
359	Pain one year. Left salpingo-oöphoritis. Cervicitis. Erosion	Ip. 1. Ions. 9	Recovery.
501	Pain 4 years. Tenderness both iliac fossae. Cervicitis	Ip. 2. Cerv. 7. Ions. 3	Recovery.
168	Bilateral-salpingo-oöphoritis	Ip. 8	No improvement.
375	After miscarriage 2 months ago. Swelling right fornix. Cervicitis and erosion	Ip. 5. Cerv. 3. Cerv. 11	Recovery. Relapse of cervicitis after 14 days. Curetted.
514	After miscarriage 3 years ago. Swelling left fornix	Ip. 8	Still has pain Failure.
7	Pain 2 years. Erosion and cervicitis	Cerv. 7	Recovery; 7 months later still recovered.
36	Post-puerperal. Swelling right fornix. Cervicitis	Cerv. 3. Ip. 16	Recovery. Followed one month.
137	Followed miscarriage. Tender swelling left fornix	Cerv. 3. Ip. 11	Recovery; 4 months later well and preg.
210	After confinement 5 years ago. Salpingitis	Ip. 7	Recovery; 5 months later 2 months preg.
295	After confinement one year ago. Salpingitis	Ip. 11	Recovery.

The cases occurring after confinement made a good recovery as a rule; they all had physical signs of salpingo-oöphoritis. Cases 168 and 514 definitely failed to improve after a month's treatment. I have no explanation of why this is so, or in what respect they differed from the rest. In one case (375) the cervicitis and erosion relapsed. The patient appeared recovered on January 6th, 1928, and again on February 21st. She was not seen again till October, when she gave a history of having been curetted in the meantime. There was a bright red rim round the cervical os, which returned to normal after a few diathermy treatments. The salpingitis had not relapsed.

TABLE IV.—*Parametritis, with Deep Lacerations.*

Case No.	Remarks.	Treatment.	Result.
567	Left parametritis. Two years' duration	Cerv. 3. Ip. 6	Recovery.
562	Parametritis	Ip. 4	Recovery incomplete. Was to have attended as an out-patient, but did not do so.

TABLE V.—*Following Operation for Ectopic Foetation.*

Case No.	Remarks.	Treatment.	Result.
524	Six to seven months after operation	Ip. 3	Relief of symptom. She was to have attended as out-patient, but did not do so.
418	Tenderness and swelling left ovary and tube. Operation 10 years ago	Ip. 8	Recovery.
576	Large hard tender mass low down in Douglas's pouch. After operation 12 months before. Thin, ill and toxic-looking	Ip. many	Small, hard, not tender swelling can still be felt. General health good.

Conclusions.

The cases likely to recover after a comparatively short course of treatment are those of chronic salpingo-oöphoritis without rise of temperature or constitutional disturbance. The pain in one or both iliac fossae may be severe, and there may be a considerable degree of ill health due to pain, sleeplessness, and toxaemia. The presence of pus is not necessarily a contraindication. The chronic pus tube may disappear as far as physical examination goes. Cases are likely to do well if there is evidence of infected cervix with or without erosion, and especially if there are gonococci present.

From the point of view of the effect of treating the cervicitis the figures are very striking. Twenty-five cases have been associated with cervicitis, but one of them received only three treatments. Of the remainder, twenty-two have recovered of the salpingitis, but two of them have had a relapse of the cervicitis. Two recovered as far as physical examination was able to establish the fact, but subjective symptoms remained. If the cases in which cervicitis occurred are included in the failures, we have twenty successes, two failures, and two doubtful successes out of twenty-four cases.

The treatment of gonococcal salpingitis and ovaritis consists in most cases in the treatment of the cervical infection. This applies also to many cases of salpingitis due to infection other than gonococcal. The treatment of the cervix should not as a rule be proceeded with forthwith, but be preceded by a few applications of intrapelvic heating. If treatment of the cervix is undertaken when salpingitis of any degree of severity is present great increase of pain with rigidity of abdominal walls and rise of temperature may result. This condition may last a fortnight, and has occurred in two or three of the cases. No harm has resulted, and the cases have all been eventually cured. It will be noticed from the tables that some of the cases make a rapid recovery even if the symptoms have existed for years. It is probable that 80 per cent. of recoveries would be obtained if gynaecologists chose the cases with a knowledge of what may be expected of the treatment and, while giving a chance to cases on the borderline, exclude those which are obviously unsuitable.

A follow-up of cases treated within the last two years has been carried out by Dr. Simon, and in 80 per cent. of those from whom answers were received recovery was confirmed.

These chronic pelvic infections and inflammations have always presented a difficult problem in gynaecology. I believe that diathermy offers a new method which will avoid a long and tedious period of treatment with swabs, tampons, and douches, will render mutilations unnecessary, and will bring about recovery in some cases in which operation is not likely to succeed.

X RAYS IN THE DIAGNOSIS OF CHRONIC APPENDICITIS.

BY

A. P. BERTWISTLE, M.B., CH.B., F.R.C.S.ED.

THOSE who were present at the Section of Surgery at the Annual Meeting of the British Medical Association in 1927, or who read the report of its excellent discussion on chronic appendicitis, must have been struck by the small diagnostic value which attaches to any one sign.[1] Compared with the acute form, chronic appendicitis presents a vague clinical picture; the appendix, like the hand of a clock, may point in any direction, and it is not surprising that tenderness may appear in widely different areas. I pointed out, however, in a letter published in the same issue with the report, that at the discussion no one had mentioned the diagnostic value of *x* rays.[2] Yet radiology, taken in conjunction with clinical signs and symptoms, probably gives us more definite help in diagnosis than any other means. I cite the following case, referred to me by Dr. Mathieson of Harrow, in illustration.

Clinical History.

The patient, a woman aged 44, had severe abdominal pains, particularly in the left costal region. They were intermittent, lasting one to three days, with similar periods of intermission, and were much worse at the menstrual periods. The whole abdomen was tender, more so at some times than at others. Occasionally her complexion was sallow.

Radiographical Report.

The stomach was of the fish-hook type, normal in position. Its size was increased and peristalsis more rapid than usual. There were no tender points. It indented easily with pressure. The duodenal cap was normal.

Radiographic examination five days later: A round collection of barium was seen in the pelvis, and streaks of barium were present in the colon.

Cholecystogram: Sodium tetraiodophenolphthalein was given orally. The gall-bladder was not seen. An undissolved capsule and streaks of the drug were seen in the ascending colon.

Conclusion: "The presence of barium probably in the appendix five days after the meal is strongly suggestive of chronic appendicitis. The association of pain with the menstrual periods leads one to suppose that the appendix is involving the ovary or tube. The failure of the gall-bladder to fill suggests that this is diseased. The flatulence and occasional change in her complexion would be explained by cholecystitis."

Operation.

The operation was performed by Miss M. M. Chadburn, who was unaware of this report, and I am greatly indebted to her for the following account.

"The appendix was rather fibrosed and bound down to the caecum by adhesions containing dilated capillaries, indicative of chronic rather than acute inflammation. The extreme tip was swollen. The ovary on the right side, and to a less extent that of the left, was lightly adherent to the surrounding viscera. The condition suggested that infection had spread first to the right and then to the left ovary, the appendix being on the pelvic brim. Appendicectomy was performed. The gall-bladder appeared normal. The tissues were very friable, making stitching difficult."

After-History.

Six months later she reported that she had had three attacks of pain, but in the mildest possible form. Convalescence was slow, but she is very pleased with the result.

The failure to visualize the gall-bladder is due to hepatic or cystic disease; in this case the patient had an undissolved capsule in the colon, so did not get the full dose. The friability of the tissues is interesting; it may have resulted from prolonged sepsis.

Radiographical Examination of the Appendix.

It is only occasionally that the appendix can be seen with the barium meal in the ileum and ascending colon. The best time is after the third day, by which time the rest of the opaque meal has passed on. If the appendix is visible after this time it is probable that it is infected and its muscular power impaired. Failure to see the appendix may, however, be due to its lumen being obliterated by adhesions or concretions. If the appendix is visible the following appearances suggest disease:[3 4 5]

1. An irregular lumen. While some parts are dilated, others are constricted. Especially important, according to Spriggs and Marxer, is a claw-shaped termination of the barium column.

2. Tenderness over the appendix. Here one can actually place a finger over the organ.

3. Concretions. These appear as mottled areas interrupting the barium column. If large and stationary over several days they must be looked on as evidence of defective musculature. (Occasionally they become impregnated with lime and cast a shadow mimicking a ureteral calculus.)

4. Spasm. This shows itself as one or more abrupt terminations in the opaque column. It is usually associated with ulceration.

5. Acute kinks. These may be congenital or the result of adhesions.

6. Spasmodic conditions of stomach, duodenum, and colon. These are commonly found in chronic appendicitis, but are also found in other abdominal conditions. (In the above case there was hyperperistalsis.)

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[2] A. P. Bertwistle: Ibid.
[3] E. I. Spriggs and O. Marxer: *Duff House Papers*, 1922, pp. 12–40.
[4] Idem: Contribution to *A Descriptive Atlas of Visceral Radiograms*, by A. P. Bertwistle and W. H. Shenton.
[5] A. P. Bertwistle: *Surgical Radiology*, 1929, p. 64.

RUPTURED SUBARACHNOID ANEURYSM.

A NOTE ON A PROBABLE CASE.

BY

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IN view of the interest that has recently been aroused in the ante-mortem diagnosis of rupture of subarachnoid aneurysm, the following case appears to be worth recording as a probable example.

A labourer, married, aged 33, was brought to hospital on May 23rd, about 5 o'clock in the afternoon. He had been perfectly well when he went to work that morning; but about 9 o'clock, when he was shovelling gravel, he was suddenly attacked by very severe occipital headache, and he vomited. He gradually became unconscious, and for three hours, before admission had been violent at intervals.

His previous history was limited to a gastric ulcer twelve years previously, pneumonia two years later, and a colliery accident about eight years ago. In this accident his left ankle had been injured, leaving some limitation of movements, and he had received a blow on the left side of the head. (A skiagram taken after admission showed no bony abnormality of the skull.) Otherwise he had been perfectly well for eight years, and he denied any risk of venereal disease.

On admission at 5 p.m. he was cyanosed, semi-conscious, incontinent, and resented interference. At intervals he was noisy and violent. His pupils were contracted, equal, and did not react to light. There was rigidity of the neck and Kernig's sign was present. His knee-jerks were increased on both sides, and any attempt to elicit plantar reflexes on either side resulted in a violent flexion of the whole limb. The arms were flaccid, the left perhaps a little more so than the right. The optic discs were difficult to see; but the retinae appeared to be normal.

Nothing abnormal could be found in the lungs or abdomen. The urine contained a substance which slightly reduced Fehling's solution.

The heart was not enlarged; but the second sound was accentuated in the pulmonary area. His pulse on admission was about 80, regular and strong.

Lumbar puncture was performed at once, and his pulse fell to 60, but rose to 70 in another hour. The cerebro-spinal fluid was under greatly increased pressure and contained about four-fifths blood. Examination of the fluid was difficult, but no abnormal cells were found, and the Wassermann reaction was negative. After the puncture the patient became much quieter and sufficiently conscious to complain of severe occipital headache. All his reflexes were present, but reduced, with the exception of the plantar response, which was still very strongly flexor.

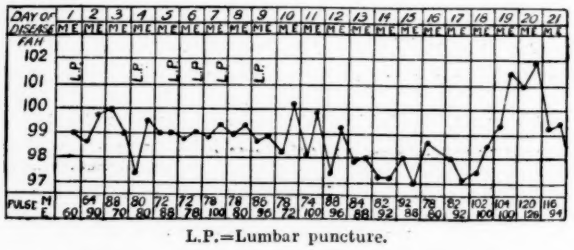
The next day the patient's condition was much improved, and a fuller examination was possible. It was found that the left plantar reaction (the side of the old injury) was more violent than the right. Otherwise the central nervous system signs had not altered. Weakness of the left side of the face was doubtful. He still complained of severe occipital headache and also of pain between the shoulder-blades on moving his arms. The grip of

both hands was very weak, but the legs moved normally. No sensory abnormality to pin-prick or light touch could be found. His systolic blood pressure was 140 mm. of mercury. Morphine and hyoscine were given repeatedly for the pain and restlessness.

On the following day he had improved, but he had retention of urine for twenty-two hours; catheterization was not necessary.

From May 26th to 29th lumbar puncture was performed daily. The pressure and the proportion of blood were less on each occasion. On May 30th his reflexes were as before. The reaction of the pupils to light was sluggish, and the left disc appeared to be paler than the right. The next day lumbar puncture produced only a few drops of opalescent fluid. The patient still needed morphine.

Epistaxis occurred on June 1st, after which his blood pressure came down to 115. The reducing substance was by this time absent from the urine. From then until his discharge on July 4th recovery was steady with the exception of a relapse from



L.P.=Lumbar puncture.

June 9th to 11th. On these days his temperature rose to 102°–103°. The patient vomited and complained of severe headache. The pulse, which had previously been varying between 60 and 96, increased during the fever to as much as 128. The attack subsided without a lumbar puncture.

On discharge the central nervous system appeared to be normal, except for the increase of the left plantar reflex and the left pupil being larger than the right. Three weeks later the same signs persisted. Headaches were still present on exertion, but less severe.

Commentary.

Previous cases seen at necropsy or during operation have been found to have an aneurysm which has ruptured into the subarachnoid space at the termination of the internal carotid artery. The aneurysms have been considered to be congenital in origin.

Typically there is no evidence of syphilis, no history of trauma, the blood pressure is not necessarily high, and the patient is younger than the usual victim of a vascular intracranial lesion.

Features at the time of the attack to which Symonds draws attention are:

1. The sensation of something snapping at the base of the skull.
2. Brief initial loss of consciousness followed by a dazed "wandering" state.
3. Intense pain at the back of the neck associated with stiffness.

The case recorded in this note is that of a young healthy patient. The cerebro-spinal Wassermann reaction was negative. The highest blood pressure recorded was 140 mm. of mercury, but this was, of course, after the haemorrhage. The patient had a definite history of trauma; but this was eight years before and he had been perfectly well in the interval.

The attack began with sudden severe pain at the back of the neck and with sudden collapse. The period of unconsciousness was brief. Possibly this was due to early lumbar puncture. The patient subsequently complained of severe occipital headache and stiffness of the neck. The pain and stiffness of the neck were very marked; and his refusal to grip with his hands and the pain on movement of his shoulders are further evidence of irritation in the cervical region.

That the haemorrhage was not intracerebral is shown by the absence of localizing signs at the outset and the almost complete absence of residual lesions. The proportion of blood in the cerebro-spinal fluid leaves no doubt that the haemorrhage must have been extensive. Had it been intracerebral a haemorrhage of this size would almost certainly have left more definite residua. The only residual sign was the slight inequality of the pupils, which may reasonably be attributed to organization of blood clot round the third nerve at the base of the brain.

It is interesting to note the rise in temperature during the relapse, and that it was associated with increased pulse rate, not with the slow pulse of increased intracranial pressure.

Summary.

1. A case is reported of extensive intradural haemorrhage with sudden onset accompanied by collapse and signs of increased intracranial tension and of irritation at the base of the brain.

2. The lesion occurred in a young and healthy man, and is not attributed to trauma, infection, or heart or kidney disease.

3. Recovery occurred without appreciable residual lesion.

4. The diagnosis made was rupture of an intracranial aneurysm into the subarachnoid space.

My thanks are due to Dr. J. V. C. Braithwaite for permission to record this case.

A RAPID METHOD OF TREATMENT IN PERFORATED DUODENAL ULCER.

BY

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SURGICAL intervention, in so grave an emergency as the perforation of a duodenal ulcer, demands a variety of operative technique which combines speed and simplicity so that the degree of shock already existing shall not be made more profound by prolonged manipulation or anaesthesia. At the same time it must be remembered that a crisis has been reached in the history of the ulcer, and that, successfully treated, it may now undergo a spontaneous cure, relieving the patient of all his previous symptoms. Bearing this fact in mind, it is important that the operation shall be carried out in such a manner as to cause a minimal degree of narrowing of the duodenum, so that the necessity for performing a gastro-jejunostomy, either immediately or at a later date, shall seldom arise.

The method adopted by most surgeons when closing a duodenal perforation consists in the application of a purse-string suture or of a number of Lembert's sutures in the vicinity of the crater with a view to infolding its margins completely. With this aim accomplished, the operation is concluded, commonly, by the application of an omental graft. If the lesion is of some chronicity, it is also necessary either to excise the friable margins of the ulcer or to insert the sutures at least one-half to three-quarters of an inch from the actual gap, so as to prevent the catgut, when it is tied, from cutting through.

The main criticism which attaches itself to the above procedure is the degree of constriction of the duodenum which it necessarily engenders, and which is a much more fertile cause of a permanent stenosis than the fibrosis and contraction of the ulcer. I have proved to my own satisfaction that a higher percentage of successful results is obtainable when constriction of the duodenal lumen is reduced to a minimum.

The method of operation about to be described has been employed on fifty-one occasions during a period of three and a half years. It can be performed with greater rapidity and has yielded uniformly satisfactory after-results, since in only one instance among forty-two successful cases has a subsequent gastro-jejunostomy been found necessary.

The abdomen is opened by an incision three to four inches in length, situated above the umbilicus and about one inch to the right of the middle line. The stomach is identified and grasped by a protected clamp, applied over a saline towel. The clamp provides an opportunity for gentle traction, which is usually capable of bringing even an awkwardly situated perforation into comparative proximity with the edges of the wound.

Varying with the size of the perforation, some four to six sutures (catgut size 000 on a 30 mm. half-circle Souttar needle) are now rapidly inserted. All coats of the gut are invariably penetrated, and at least two sutures traverse the

floor of the aperture, entering and leaving the serous surface approximately a quarter of an inch from the margins of the ulcer. The remaining sutures occupy positions a little to the gastric and duodenal sides of the ulcer, and in each case the ends of the stitches are grasped by a pair of light forceps. The effect produced is that of an archway of sutures placed in the long axis of the gut and extending on each side for at least three-quarters of an inch beyond the ulcer cavity.

A long omental strand, of not too slender proportions, is now sought out and a fine suture passed through its extremity. Forceps readily draw the suture and omentum through the archway, and the tip of the strand is finally anchored by a couple of stitches to the serous and muscular coats in the region of the pyloric antrum. The sutures forming the archway are now tied off; those beyond the margins of the cavity are firmly knotted, whilst quite a fair degree of tension can be placed upon the stitches traversing the crater since the omentum behaves as a soft resilient cushion, which prevents the catgut from cutting through the rigid tissues.

When it has been established that the new attachment of the omentum has left no loop which might strangulate a segment of the intestine, the gastric clamp is removed and the abdominal contents are replaced. The peritoneal cavity is gently swabbed until it is fairly dry, and if perforation has preceded operation by a longer period than twelve hours suprapubic drainage is instituted, otherwise the incision is simply closed in layers.

On theoretical grounds it might be argued that this method should not succeed, since it strangulates the omentum over an area where infection is distinctly liable, and hence that sloughing and reopening of the crater should be the outcome of the procedure. In no instance, however, has this accident occurred, and an opportunity was given for observing the late results of the operation when a patient, who had been operated on two years previously, underwent laparotomy for cholelithiasis. In this case the ulcer seemed to be completely healed, the duodenum exhibited little evidence of scarring, and was merely thickened somewhat over the portion of the outer wall where the omentum had been applied. Local adhesions were conspicuous by their absence.

An immediate mortality of 17.6 per cent.—nine cases out of a group of fifty-one—has already been admitted in an earlier section of this paper, and calls for some further explanation. In one instance only did death occur when operation followed within twelve hours of perforation. In two cases from sixteen to eighteen hours had elapsed, whilst in two others there was an intervening period of more than twenty-four hours. The remaining fatal cases were not operated upon until more than forty-eight hours after perforation, when well-marked peritonitis was already established.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

FRACTURE OF ANTERIOR ILIAC SPINE.

THE following case seems to be worth recording since I can find only one reference to this condition in the literature at my disposal—namely, in Wilson and Cochrane's *Fractures and Dislocations*, 1929.

A strong young man, aged 19, had been practising for some sports, and had taken part in putting the weight and high and long jumping. He then tried a hundred yards sprint, but after travelling some seventy-five yards he felt "something give," and had severe pain in the groin, causing him to fall. He was raised to his feet, but could not flex the right thigh.

When examined he was found to have perfect passive movement of the knee and hip, but hyperextension of the thigh produced slight pain in the right groin. On walking he had to drag the right limb forward, being unable to lift the foot off the floor, unless by great effort. On deep palpation over the anterior part of the iliac crest, something was felt to slide backwards and forwards, and as the anterior superior spine was ill defined, the diagnosis of avulsion of the anterior superior iliac spine by the sartorius muscle was made. This was confirmed the following day by an *x*-ray examination, when the spine was found to be lying about one inch below its normal situation with the patient in the recumbent position.

The interest of this case seems to lie in the fact that the patient was using the sartorius to a less extent while running than while long jumping, etc., and secondly in the comparative rarity of a fractured anterior superior spine by indirect violence.

Gravesend. JAMES CRAWFORD, M.B., Ch.B.Ed.

CERVICAL SUBLUXATION FOLLOWING ANAESTHESIA.

THE following case seems of sufficient interest to warrant recording.

Last February the patient, a girl aged 9, was operated on in hospital under general anaesthesia. When her parents took her home they stated that her head was twisted and "stuck to one side." She was taken to one of the Royal National Orthopaedic Clinics (operated in conjunction with

Before operation.

After operation.

Before operation.

After operation.

local authorities) and on examination it was seen that her head was bent towards the left shoulder and the face twisted towards the left side. The right scalenes were prominent and spasmodically contracted, the right and left sterno-mastoids prominent, though relaxed, and the child could not move her head. She complained of a dragging pain radiating towards the left shoulder. Stereoscopic *x*-ray photographs were made, but they afforded no help in diagnosis. A tentative diagnosis of a subluxated cervical vertebra was made, and the child admitted to the country branch of the hospital at Stanmore.

At the operation, which was performed six weeks after the onset of the symptoms, the head was found to be fixed in the deformed position, a transverse process on the left side being unusually prominent. On palpation of the pharynx, a hard bony mass was felt projecting posteriorly and to the left, at about the level of the top of the left tonsillar fossa. Reduction was attempted by extension and manipulation, with apparent success. There was no "click," probably owing to the presence of adhesions and to the length of time that had elapsed, but after the manipulation the bony mass felt in the pharynx was median in position and no longer prominent. The child has regained a full range of movement without deformity.

I have to thank Dr. C. W. Durward for excellent photographs of the patient, taken before and after operation.

J. B. BARNETT, F.R.C.S.

Royal National Orthopaedic Hospital, Stanmore.

Reports of Societies.

STILLBIRTH AND NEO-NATAL DEATH.

AT a meeting of the Edinburgh Obstetrical Society held on May 8th, with the president, Dr. HAIG FERGUSON, in the chair, Dr. CHALMERS FAHMY and Dr. ELSIE CROWE presented a communication on "Stillbirth and neo-natal death." The paper was based on a study of 300 cases from the Royal Maternity and Simpson Memorial Hospital, Edinburgh. Of the total number, 248 foetuses were born at, or near, full term, while 52 were definitely premature. In order to keep in prominence the clinical aspect of the investigations, the cases were discussed according to the manner of delivery, the stillbirths and neo-natal deaths being dealt with separately in each group. Detailed microscopical reports were not included in the paper, though histological examination of a great many foetuses had been carried out. The 248 cases of foetuses born at, or near, full term were discussed according to the following table.

Management of Labour.	Stillbirths.	Neo-natal Deaths.	Macerated.	Total.
Spontaneous delivery (all vertex presentations)	47	16	28	91
Forceps	54	7	4	65
Breech	47	4	5	56
Caesarean section	8		0	13
Craniotomy	23	0	0	23
Totals	179	32	37	248

Special reference was made to the occurrence of intracranial haemorrhage, and its frequency in cases of normal spontaneous delivery was emphasized. There were 47 stillbirths in the group of spontaneous delivery (all vertex cases). Of this number, 11 deaths were due to intracranial haemorrhage, and 15 (in 8 of which some intracranial haemorrhage was also found) to asphyxia.

Acute anaemia was thought to be the cause of death in four instances. In each of these labour was complicated by ante-partum haemorrhage, and no cause for death was found other than the pale and anaemic state of all the foetal organs. Clinical histories were quoted of cases of easy labour in which death was due to intracranial haemorrhage. It was pointed out that in parous women the foetal head may be driven right through the pelvis from brim to outlet in a short space of time after rupture of the membranes, and that such rapid descent may predispose to the occurrence of haemorrhage. Such a rapid passage of the head was not dissimilar to that occurring during a breech delivery, which was known to predispose markedly to cranial injury. The number of neo-natal deaths in infants born at, or near, full term was 16, and of this number 7 were due to intracranial haemorrhage. The association of intracranial haemorrhage with asphyxia was noted. In many cases it was difficult to say which factor predominated, but stress was laid on the fact that the two conditions were frequently found in combination. The recognition of this fact was important clinically, for it pointed clearly to the need for treating asphyxiated infants with great gentleness, whether they were born white or blue. That infants born pallid should be treated as if in a condition of shock was well recognized, but the speakers did not think that equal care had hitherto been deemed necessary for those born in the state of blue asphyxia. Such infants, too, might be suffering from intracranial haemorrhage, and accordingly methods of artificial respiration, such as Schultze's and Byrd's, should not be practised. Attention was also drawn to the occasional finding of intracranial haemorrhage with pulmonary disturbance in the infant surviving only a few days. It was thought that the haemorrhage, by depressing the respiratory function, might predispose to partial atelectasis and also to patches of pneumonia.

Ureteric Dilatation and Pyelonephritis of Pregnancy.

Mr. D. STEWART MIDDLETON communicated a paper on "Ureteric dilatation of pregnancy: its complications and sequelae."

Mr. Middleton began by discussing the question of the dilatation of the ureters which is commonly associated with pregnancy. This dilatation had only been noted up to the last few years in post-mortem specimens, but latterly by pyelo-ureterography; thus it could be demonstrated that this was a condition that occurred in about 85 per cent. of pregnant women. The right ureter was usually affected alone, but both ureters might be affected—the left ureter becoming dilated at a much later date in the pregnancy. The etiology of dilatation of the ureter was discussed, and Mr. Middleton strongly favoured the theory that the ureters were affected by the same forces that had been acting on the uterine musculature throughout pregnancy—namely, muscular hyperplasia combined with diminished contractibility. The greater dilatation on the right side might be accounted for by torsion of the uterus. During the puerperium the muscular hyperplasia would, of course, retrogress, and mobility would be re-established immediately after delivery. It was clear that this thickened ureter, already the seat of connective tissue hyperplasia, and exposed to what must constitute a considerable degree of trauma during labour, would be liable in certain cases to become the seat of sufficient fibrosis to cause ureteric stricture, thus perpetuating what was otherwise a temporary hydro-ureter.

Mr. Middleton then went on to discuss the question of acute pyelonephritis of pregnancy, which, in his opinion, was due to chronic colonic stasis, which allowed the absorption of *B. coli* from the colon, and resulted in the infection of a vulnerable dilated ureter during the process of excretion of these organisms from the blood via the renal tract. In regard to treatment, he suggested that raising the foot of the bed might have a beneficial influence by decreasing any tendency to pressure on the lower ureter by the lower pole of the uterus. The majority of cases of pyelitis responded to simple treatment, but in more serious cases the dilated ureter had to be drained, and it was now seldom necessary to induce abortion or premature labour in cases of pyelitis. At the same time, measures should be taken to treat the stasis in the proximal colon wherein lay the origin of the infection. Idiopathic haematuria of pregnancy was next discussed, and was thought to be due to a compression of the veins in the renal pelvis, with a corresponding rise in the arterial tension. This would give rise from time to time to rupture of a small vessel. Mr. Middleton gave details of four cases of haematuria during pregnancy, and showed that catheterization of the ureter and aspiration of the renal and ureteric residual urine would, as a rule, cut the haematuria short. With regard to ureteric stricture, Mr. Middleton was inclined to emphasize the close association of stricture with multiparity. Before coming to this conclusion Mr. Middleton collected all the pyelograms made in the electric diagnostic theatre of the Royal Infirmary which showed a dilatation of the ureter due to stricture. On going thoroughly into the case of each of these pyelograms it was found that all occurred in multiparae, the dilatation in all but two being confined to the right side. This distribution of dilatation corresponded accurately with that of the simple dilatation of pregnancy. None of the cases had suffered from acute pyelitis during pregnancy, but the symptoms could be traced to having occurred shortly after a confinement. Mr. Middleton thought that stricture of the ureter gave rise to two clinical syndromes: (1) idiopathic haematuria of pregnancy; (2) pain in the renal region, usually on the right side, occurring in a multiparous woman, varying from a mild backache to pain so severe as to suggest renal colic. The pain often began during a pregnancy as backache, and became intensified during successive pregnancies. In more than half the cases no abnormality would be found in the urine, and the decision to proceed to a routine urological examination had to be based on consideration of the symptoms, and not on examination of the urine.

TREATMENT OF OESOPHAGEAL CANCER BY RADIUM.

AT the summer meeting of the Section of Laryngology of the Royal Society of Medicine on June 7th, with Mr. H. BELL TAWSE in the chair, a communication was made by Mr. F. J. CLEMINSON on the treatment of carcinoma of the oesophagus by radium.

Mr. Cleminson said that early last year two papers appeared which, taken together, suggested to him that it might be possible to improve the treatment of carcinoma of the oesophagus. The results in this field could hardly be worse—the mortality had been 100 per cent. in the hands of almost every worker—and there was always a chance that they might be improved. He therefore determined to try the method of bringing about lung collapse on one side and afterwards of practising a thoracotomy with a view to placing radon seeds in the periphery of the growth. Radon (radium emanation) was chosen rather than radium to obviate the necessity of subsequent removal. So far the method had been tried in three cases, which he described in detail. The first was a nervous man, aged 74, who was seen on June 12th of last year. For three months he had complained of a little indigestion and difficulty in swallowing. An *x*-ray film showed an irregular stricture at the level of the fourth to the sixth dorsal vertebra, strongly suggestive of malignant disease. A portion removed for histological examination showed active carcinoma, with many of the cells undergoing mitosis. On June 28th, the lung having previously been collapsed, the left side of the chest was opened, when an excellent view of the mediastinum was obtained, but it was not possible actually to feel the growth. Twenty unscreened radon seeds, each containing 1.2 millicuries of the radium emanation, were implanted by means of a curved needle and trocar, being distributed around the inferred position of the growth. About seven to ten days afterwards there was a distinct improvement in the swallowing, but pleural effusion formed and delayed convalescence. This was probably due to the fact that the seeds were unscreened, with consequent irritation from the alpha and beta rays. On August 21st a platinum-screened tube of radium, with an effective length of 2 in., and containing 50 millicuries, was passed through the oesophagoscope into the lumen at the position of the growth and left for twenty-four hours. The patient remained well for a time, but seven weeks later he had lost a good deal of ground, swallowing became very difficult, large quantities of sputum were brought up, and on November 8th he died. The second case was a man aged 58, first seen on July 24th. He had difficulty in swallowing, and there was an irregular stricture at about the level of the arch of the aorta. The oesophagoscope revealed an ulcerated growth, which had all the appearance of a carcinoma. A specimen was obtained later which showed carcinoma of the squamous-celled type. An artificial pneumothorax was induced, and afterwards on the same side a thoracotomy was done, giving a good view of the mediastinum. Again twenty radon seeds, each containing 1.3 millicuries, and having platinum screens, were inserted. The growth could not be felt, but, its position being known, the seeds were disposed around that area. On the fourth and fifth days the temperature rose to 101° F., and there was a moderate pleural effusion. Four weeks after the operation the patient went to a convalescent home, and marked improvement in the swallowing was evident. Six weeks later swallowing was not so good, and the radiogram revealed obstruction below the level of the aortic arch. A platinum-screened tube, of 2½ in. effective length, and containing 38.8 millicuries, was passed into the oesophagus, and kept there for a time, after which the patient got better, but later relapsed and died, the post-mortem examination revealing carcinoma on the left side of the oesophagus, about 4 in. in extent. It was noticed that certain of the implanted seeds were missing, and it was clear that through an abscess which had formed or by some other means they had got access to the lumen of the gullet and escaped. In the third case it was decided that less radon should be used in order to diminish the chance of necrosis of tissue consequent upon the crowding of the seeds together. This was the case of a man, aged 61, with a history of dysphagia for five months. He was seen on February 1st of this year, when it appeared that there was a stricture at the level of the fourth dorsal vertebra. The growth proved to be a squamous-celled carcinoma. The lung was collapsed on the right side, thoracotomy was done, and 16 radon seeds inserted, representing a total dose of 19.8 millicuries. This man was a bronchitic individual, and ran a hectic temperature for some time afterwards, dying about five weeks after the thorax had been opened. It was too early to say yet, Mr. Cleminson concluded, that this technique was likely to produce a cure in any case.

Oesophageal growths were notoriously refractory to radium, but the purpose of his communication was to call the attention of other workers to this method, and so prepare them for the time when possibly something of real value might come along this line of investigation.

Mr. MUSGRAVE WOODMAN (Birmingham) also gave a brief account of some similar work which was started last November. It had been felt that the application of large doses of radium centrally in these growths must definitely fail, because the substance was in contact with the necrotic centre of the growth and not with the growing edge. The advantage of the radon was that time limited its activity—at the end of a week it was quite inert—and also that the small seeds were very easily inserted. There had never been any local inflammatory reaction, nor any general reaction, nor any immediate mortality in the thirty cases in which the method had been tried. The general improvement in swallowing was quite considerable. At the end of a month after the first application of the radon there was found invariably a regeneration of the epithelium, a diminished vascularity, an increase of fibrous tissue, and an improvement in the upper part of the stricture which it had been possible to reach. The speaker illustrated his cannula and trocar for implanting the seeds, and described two cases, one of which was still well six months after one application of radon; the other, after some improvement, had died of ascites. The surgery of the oesophagus was very difficult, but he looked forward to the time when this part of the alimentary tract would be dealt with as easily as the rectum.

Mr. THACKER NEVILLE also read a note in which he reported on two cases treated by radon inserted into the growth; the patients lived for about five months.

The PRESIDENT said that a great deal more work needed to be done on this subject, especially in the way of improvement in the technique of thoracotomy, but the future seemed to him to hold out a chance of cure by the combination of operation with radium insertion.

EXPLORATORY OPERATIONS AND THEIR JUSTIFICATION.

AT a meeting of the West London Medico-Chirurgical Society on June 7th, held at the West London Hospital, with Dr. H. H. SANGUINETTI in the chair, a discussion took place on exploratory operations and their justification.

Mr. DONALD ARMOUR, in opening, said that he had searched the Oxford Dictionary for a proper understanding of the word "exploration," and found its medical and surgical connotation given as "the examination of an organ, wound, etc., by the use of the finger, probe, or other physical appliance." Before undertaking such an exploration the surgeon must be able to show the reasonableness of his action. The tendency to perform exploratory operations was fostered by the element of uncertainty in medicine and the comparative safety of operations to-day, but an exploratory operation should not be used as a labour-saving device nor as a short cut to a diagnosis. Surgical skill and safety must not be allowed to weaken surgical conscience and judgement. Rather should every clinical means be used to make diagnosis more accurate, treatment more beneficial, and prognosis more positive. No one would question the advisability or justification of operations distinctly indicated for the relief of conditions only to be treated surgically, and in which the exploratory element was only of minor importance in the diagnosis; but when

the exploratory element became more pronounced, and the benefit to be derived more problematical, the justification became more difficult. From the ethical point of view there were justifiable and unjustifiable operations. The first were carried out in cases in which the diagnosis or surgical indications remained obscure, but in which the operation promised benefit to the patient, either through the relief of suffering or the averting of impending danger. Unjustifiable operations were those in which there was no real promise of facilitating a diagnosis, or of lessening suffering or warding off peril, and in the hands of the unscrupulous such operations might become reckless and sometimes even criminal.

Dr. J. A. RYLE laid it down that exploration should be the last method of approach to a diagnosis, and never undertaken lightly. The justification varied with the circumstances of the case, with the age of the patient, for example, and with the facilities for keeping observation on the patient and the availability of specialist colleagues. The increased precision of clinical diagnosis, both in acute and chronic abdominal disease, had, largely through the contributions of surgery, greatly diminished the need for exploration. Nevertheless, it would be generally agreed that the exploratory laparotomy could not be excluded. The exploratory operation might be the mature decision of a wise and careful man or the crude resort of an ignorant and baffled man. Exploration was justified when strong fears were entertained as to the presence of organic disease of a kind requiring surgical relief, while no determining evidence of its presence or nature was otherwise possible; also in the case of palpable tumours of uncertain nature when there was obstruction which might be due to growth in the head of the pancreas or to impacted gall-stones, for example; or again, when organic disease was known to be present and its nature had been determined, but there was uncertainty as to operability. This last applied to many growths of the stomach and colon, where diagnosis might be established with considerable confidence, and yet only exploration could decide whether the condition was operable. He thought also that exploration was justified, though rarely, in chronic abdominal cases in which it was believed there might be an organic element, due allowance having been made for constitutional and psychological factors, and other measures tried without success. As for contraindications, exploration of the "chronic abdomen" *per se* was far too frequently regarded as justifiable. Many chronic stomach cases no more justified surgery, even though the physician could not relieve them, than did common headaches or backaches. Many cases of pain in the iliac fossa were allowed to go to unjustifiable operation. It had to be remembered, on the other hand, that again and again an exploratory laparotomy revealed some quite unexpected and quite simple thing, such as an inflamed appendix, when something much worse had been expected, and therein it justified itself. Perhaps in no situation was one more forcibly reminded of the Hippocratic aphorism, "Life is short, the art of healing is long, experience fallacious, judgement difficult." It behoved the surgically minded to be medically thoughtful, and the medically minded to be surgically thoughtful.

Mr. ZACHARY COPE considered that it was justifiable to explore the abdomen or any other part of the body only when every other faculty or means of diagnosis had been exhausted. Disease showed itself in four ways: by anatomical alteration, physiological perversion, general depreciation, and pain. Pain was also a physiological perversion, but it was so characteristic a feature of many diseases of the abdomen, and often the only symptom, as to merit a separate category. Sometimes the diagnostician had only the symptom of pain to help him. If pain persisted in the abdomen in one spot and with increasing intensity, and if it had certain referred areas which were constant, and which suggested that some part of the nervous system was irritated, then it might be justifiable to open the abdomen, but the occasions for so doing were very few. When all four of these signs were present, as in hydronephrosis, there was no doubt whatever—one had the diagnosis. But there were many cases in which only one or two of the signs existed, and exploration seemed to be called for. Operability, again, was a delicate point. There were many cases in which it was hardly justifiable to open, and yet one never knew when one might be able to do something for the patient. It was impossible in many cases to distinguish between pneumococcal peritonitis, salpingitis, and appendicitis. If the indications were clear he would not open in the case of the first two, but would open in the case of the third. When it was not possible to distinguish between them he thought it justifiable to explore.

Dr. H. H. MILLS, speaking as a general physician, had come to the conclusion that there were two areas of the abdomen in which the diagnosis was almost necessarily uncertain—one the region of the gall-bladder, and the other the pelvic area. In the former category there were undoubtedly cases in which, however carefully one went to work, and whatever accessory means of diagnosis were used, the diagnosis remained uncertain until an exploratory operation was done. With regard to the pelvic area, in view of the misery which followed chronic uterine disease and other conditions, he thought as general physicians they were justified in advising an exploratory incision, and that the results were generally satisfactory. There was one series of cases in which the greatest caution should be observed as regards laparotomy—namely, projectile vomiting occurring with pyloric spasm in infants; this was exceedingly common, but, with the exercise of great patience, it did generally resolve.

Mr. HOWARD STRATFORD spoke of one region in which exploratory operation was, in his opinion, extremely important, and invariably done without undue risk. A few years ago a good deal was published about the serious consequences following empyema, especially of the sphenoidal sinus. The sphenoidal sinus was difficult to explore, but such exploration cleared up the diagnosis, and there was no other way of making certain of it. The antrum of Highmore could be explored with extraordinary ease, and here again the diagnosis was cleared up. This was a realm where exploratory operation was absolutely justifiable.

Mr. WINSBURY WHITE referred to exploratory operations in the urinary tract. It was agreed that in the recent past exploratory operations on the kidney and bladder were of great frequency, and often were entitled to be regarded as sound surgery; but that state of affairs did not exist to-day, for with x rays and cystoscopy and pyelography it was very unusual for the surgeon not to be able to come to a definite conclusion one way or the other, though there were still certain kidney cases with no tangible pathology. With regard to the bladder also it was unusual not to be able to say in any primary condition what was the cause of the symptoms, and in general it might be said that by carrying out the proper routine, in both kidney and bladder cases, one was left with no justification nowadays for exploring either of these regions.

Dr. G. M. J. SLOT thought that the consequences of exploratory as of other operations ought to be borne in mind. He believed that a woman, particularly one of middle age, who had had a fairly extensive abdominal operation never had quite the same abdomen afterwards. There was visceroptosis, and also functional symptoms, and the patient was really worse off in the long run than before. One part of the body where exploratory operations were not carried out as frequently as they might be was the chest. The operation he had in mind was simple exploratory puncture with the needle. All would agree that such explorations were perfectly justifiable.

Mr. DONALD ARMOUR, in replying, said that the range of the discussion was far greater than he had anticipated. The question of exploratory operation was, after all, one of degree. The cases in which he had pleaded the justifiability of such operation were those in which exhaustive clinical and laboratory investigation had taken place without arriving at a diagnosis. He was rather sorry to hear Mr. Howard Stratford suggest that the sphenoidal sinus could be explored without danger to the patient. There had been a number of such explorations with dire results. It was necessary only to think of the anatomical relations of the sinus. He agreed that in all exploratory operations a factor to be borne in mind was the psychology

of the patient. There was a type of patient, usually female, who demanded operations. He had known a case in which a woman had submitted herself to as many as thirteen abdominal operations. Her mental condition must have been like that of the flagellants of the Middle Ages, who found exquisite pleasure in the scourge. He was reminded of the classic case of the lady in Edinburgh who had an obsession that she had a lizard inside her. She so pestered and bothered the surgeons that at last, to satisfy her, they made a feint of operation. All they did actually was to make a small skin incision, but when she came round they told her they had removed the lizard. "What colour was it?" she asked. They replied that it was green. "Well, then," she said, "you haven't got it; that was another lizard."

OPERATIVE CYSTOSCOPY.

AT a meeting of the Brighton and Sussex Medico-Chirurgical Society held on June 6th, with the president, Mr. GEOFFREY BATE, in the chair, Mr. F. E. FEILDEN read a paper entitled "Some observations on operative cystoscopy."

Mr. Feilden said that operative cystoscopy, for the most part, could be performed under local anaesthesia, thus avoiding the dangers of a general or spinal anaesthesia. If a local anaesthetic was to be of any value, due regard should be paid to the technique of its administration. Delicacy of touch in urethral instrumentation was of paramount importance. To avoid sepsis trauma must be avoided. In cases of suspected stone in any portion of the urinary tract, the investigation was not complete without an *x*-ray examination of the entire tract. The importance of cystoscopy in the investigation of diseases of the urinary tract could not be overestimated. In Mr. Feilden's opinion the bladder sound had ceased to fulfil any useful purpose, and should be discarded. The operation of choice for the removal of all uncomplicated cases of vesical calculi was litholapaxy, by means of a cystoscopic lithotrite. The bladder was opened too often for the removal of certain foreign bodies which could be removed more easily and judiciously by the transurethral route. A calculus impacted in the intramural portion of the ureter might be released by means of a knife or scissors used through an operating cystoscope. Diathermy was of value in the treatment of a ureterocele or vesical cyst, and was also a most satisfactory method of treatment in cases of benign papillomata of the bladder. The size of the electrode used should vary according to the size of the growth—a large electrode would reduce the number of sittings necessary. Diathermy was also of some value in malignant diseases of the bladder. Mr. Feilden did not recommend the removal, for diagnostic purposes, of a piece of bladder growth through an operating cystoscope. Cystoscopy was a most valuable method of investigation in cases of prostatism. In some cases all the symptoms of prostatic disease were present without enlargement of the gland.

The operation of partial prostatectomy, performed with a Kenneth Walker diathermy punch, was a most satisfactory operation in carefully selected cases, but if employed indiscriminately results were certain to be bad. Compared with a suprapubic or perineal prostatectomy the risks were negligible. In conclusion, Mr. Feilden emphasized that success in prostatic surgery was governed by the knowledge when to operate and the appropriate type of operation to employ.

LOCAL GOVERNMENT REFORM AND VOLUNTARY HOSPITALS IN SCOTLAND.

AT the annual general meeting of the Royal Medico-Chirurgical Society of Glasgow, on May 3rd, with the president, Dr. JOSHUA FERGUSON, in the chair, an address was given by Dr. J. PARLANE KINLOCH, Chief Medical Officer, Department of Health for Scotland, on the effect of local government reform on the voluntary hospitals in Scotland.

Dr. Kinloch said he had no cut-and-dried plan to expound, and he invited an interchange of views. At the present time the whole medical organization of the country was in a state of transition. His department was attempting to formulate a comprehensive scheme, and in doing so it was taking steps to consult with the medical profession in the four great centres of Scotland. Any opinions which he might express were not to be taken as final or as having Government sanction; they were simply attempts to visualize the new organization. It was impossible to deal specifically with the hospitals alone, because the whole medical organization of the country must be taken into account.

First of all, with regard to finance, it must be remembered that the whole question of expenditure on health services had been reviewed in 1926 by the Royal Commission on National Health Insurance. We were now spending so much on these services as compared with our trade competitors that there was no case for increasing the contributions by employers, workers, or the Treasury until the whole health administration of Britain had been overhauled. Secondly, with regard to the hospitals, three types of institution had to be considered: (1) the great voluntary hospitals; (2) the public health hospitals; (3) the Poor Law hospitals. Accepting the view of the Insurance Commissioners that the health services must in the meantime be reorganized within the existing financial commitment of the Treasury, it became obvious that the voluntary hospitals must be maintained at their present level, and, if possible, expanded, if there was to be an adequate hospital service. This would enable the Government contribution to be used to fill up gaps in the existing hospital service and to round off the hospital system. It had been decided that the Poor Law hospital system should be reformed. Except in a few areas like Glasgow and Govan, the system was inferior in quality, and the hospitals must be brought up to a higher level all over Scotland. The Voluntary Hospitals Liaison Committee had played an important part in securing this reform whereby hospitals could be removed from the Poor Law, could become public health hospitals, and could be reconditioned and re-equipped to the standard of the best modern voluntary hospitals. The Liaison Committee was able to speak with the authority of the Voluntary Hospitals Regional Committees, and to advise the secretary in matters concerning these hospitals. This committee had taken the view that the existing voluntary hospitals could not meet the needs of the country, and they had agreed to Clauses 27 and 28 of the Local Government Act (the clauses empowering local authorities to provide hospitals and clinics). This implied co-operation between the voluntary hospitals and the statutory hospitals. By this means the position of the voluntary hospitals was safeguarded.

The Local Government Act laid it down that the local authority must have a complete health scheme for its area, including child welfare, ante-natal, and maternity services, medical inspection of school children and of children of pre-school age; the prevention and treatment of infectious diseases, including tuberculosis and venereal diseases; and the treatment of general diseases in the reconditioned Poor Law hospitals. These services would be augmented in certain directions; for example, it was proposed to provide medical treatment for school children. To deal with these requirements they might increase the number of whole-time medical officers, or incorporate the general practitioners within the public health service; the first proposal was a bad one, in Dr. Kinloch's opinion, and he strongly urged the importance of bringing the general practitioners into the scheme. He wished them to realize that if this was to be attained there must be organized action by the medical profession itself.

Co-ordination of Medical Services.

The national health insurance service had not been properly correlated so far with the public health services; until recently they had been dealt with by two different departments of the Scottish Board of Health, but this phase of administration had now been centralized for all time in the new Scottish Health Department. There would never be an adequate system until there was some scheme of extension of medical benefit to dependants, but it must be remembered that there was available for such a purpose an annual sum of only five million pounds. To carry out the scheme properly would require twelve million pounds a year—

a sum which the funds of the national health insurance scheme could not provide. It was proposed, therefore, to apply the whole of the funds at present available to the provision of a general practitioner service, while the whole cost of specialist services would have to be met by the local authorities. Dr. Kinloch suggested that this principle was already being applied in the case of the public health services, so that nothing fundamentally new was involved in the plan. The relation of this scheme to the voluntary hospitals and the medical teaching schools must be such that the medical schools embraced the whole. The teaching of medicine must be developed more on the preventive side. There had been some progress in this direction in connexion with the teaching of midwifery, and Dr. Kinloch referred more particularly to the schemes which had been formulated and advocated by Professor Munro Kerr. He thought there should be no difficulty about developing medical education along these lines, but there must be no hard-and-fast rules about no research work being done in the statutory hospitals, and matters of that kind. The medical curriculum must be modified in some way, though he hesitated to suggest in detail what reforms were required. They must not let the universities and the voluntary hospitals say that they were going to absorb the others; it was to be a joint scheme. It was important to prevent competition between the voluntary and the statutory hospitals; there should be the same staffs for both. Members of the visiting staffs of the voluntary hospitals should be *ex officio* consultants within the statutory hospitals, and the routine consultant work in the statutory hospitals should be undertaken by the assistants from the voluntary hospitals' staffs, acting under the supervision of their own chiefs as consultants. There was not enough money to endow a large staff of specialists. For this reason it was not proposed to interfere with the present status and privileges of the "chiefs" in voluntary hospitals. At present they had a certain say in the admission of patients, and so forth, and it was now proposed to continue this privilege with certain modifications. By a system of allocation of cases the voluntary hospitals would be kept full, the superintendents and the medical officer of health reviewing the waiting list from day to day. The normal mode of admission of patients would be from the central waiting list, but if any particular case was wanted by a surgeon it would go to his wards, and would not appear on the general list. There would thus be a new organization from the centre outwards.

The present referee system must be replaced by one in which local referees were increasingly employed and the regional referees were connected with the consulting teams in the various hospitals. These regional referees would act as a link between the medical officer of health and the voluntary and statutory hospitals on the one hand, and the general practitioners on the other hand. It was essential to put a stop to the present excessive medical certification of disablement; this would be possible only when there was an adequate consulting service.

Hospitals and the Act.

There were three important sections in the new Act relating to hospitals: (*a*) Section 14, giving power to transfer Poor Law hospitals to the public health hospital service; (*b*) Sections 27 and 28, the vital hospital clauses; and (*c*) Section 65, requiring a definite standard of efficiency in the hospital service. The larger public health areas defined by the Local Government Act would permit of more efficient health services within each of these areas, but the most important aim was to secure that the health services of these new and enlarged local authority areas were orientated towards the medical schools. In other words, the whole tendency was to evolve a regional hospital and medical service scheme out of the new local authority medical service scheme. For this purpose Scotland naturally fell into four main areas supplying the four medical teaching schools. From the point of view of the Central Department of Health such a regional system was in process of being developed in connexion with the national health insurance service.

So far as the medical teaching schools were concerned, it would be an easy matter to undertake that the teaching hospitals were supplied with a suitable admixture of cases. If, however, this was regarded as the solution of the teaching problem, then the medical schools must be content to be miniature medical schools. The real solution of the problem was for the medical schools to expand and embrace the statutory hospitals of their areas. Under such an arrangement, and without interference with the management of the voluntary and statutory hospitals, the teachers in the teaching hospitals would have access for teaching purposes to the statutory hospitals, and their assistants would largely be employed in providing the actual specialist medical and surgical services required by the local authority hospitals. Under such an arrangement there would be a co-partnership of the university authorities, the authorities of the voluntary hospitals, and the authorities of the statutory hospitals.

In the discussion which ensued Dr. A. S. M. MACGREGOR expressed the belief that it would be a long time before all the schemes which were contemplated came into operation; there must be gradual progress and evolution. He welcomed Dr. Kinloch's statement that there was to be an extension of benefit to the dependants of insured persons at an early date, for, in his opinion, no proper scheme of medical treatment could be made without this. He agreed with Dr. Kinloch that the interests of the voluntary hospitals as medical training schools must be paramount. The great benefit of the new proposals was that they removed the Poor Law system and opened up a whole field of disease to be dealt with in an organized way.

Professor E. P. CATHCART commented on the difficulty of altering the medical curriculum as at present constituted; he did not think it possible to do so without lengthening it.

Professor J. H. TEACHER cordially agreed with Dr. Kinloch's proposals to improve the facilities for teaching. He pointed out that in Glasgow an important reform of the curriculum in harmony with the views of Dr. Kinloch was already in force—namely, the schemes which had been initiated by Professor Munro Kerr in connexion with the teaching of midwifery, and which had led to important alterations in the curriculum as a whole. The scheme would economize the student's time, and give him access to certain subjects in a way which would emphasize the preventive side of medicine.

Dr. J. B. MILLER considered that the proposals outlined by Dr. Kinloch were a charter for the general practitioner of the future. The National Health Insurance Act was ostensibly an effort to raise the health of the people, and the bringing in of dependants was a necessary development of this idea.

Dr. J. FERGUSON SMITH said that in his view not the least important part of the work of the voluntary hospitals was done in the out-patient departments, and that no scheme which failed to realize this was likely to be satisfactory. He wondered what provision would be made for the support of the younger consultants. It was probably true that there were already twice as many men and women required to do the work of the hospitals as could make a reasonable living from the practice of their specialties. If the new statutory hospitals drew off any appreciable fraction of those patients who now obtained special treatment in private the position would be aggravated.

Dr. PARLANE KINLOCH, replying, said that the extension of medical benefit to dependants was still non-existent. If funds were diverted to specialist services there would be nothing available for the provision of benefits for dependants; this was the reason for bringing in the local authority. With regard to the management of the voluntary hospitals he wished to make it clear that what was intended was that the voluntary hospitals should control their own affairs, and that the statutory hospitals should be managed by the local authority. The consultants would remain in the same relation to the voluntary hospitals as at present, and would, in addition, come on the staffs of the statutory hospitals, where they would be working under the conditions existing there. In the future the supply of consultants would probably be increasingly regulated; they would graduate through the voluntary and statutory hospitals to junior teaching and research posts before admission to consultant rank.

Reviews.

MENTAL DEFICIENCY.

FOLLOWING appositely upon the publication of three parts of the Report of the Joint Committee of the Board of Education and Board of Control on Mental Deficiency, comes a fifth edition[1] of Dr. A. F. TREDGOLD's well-known and standard work on that subject and under that title. The report of the committee was described and commented upon in a leading article in the *Journal* of April 27th last (p. 775), and the fourth edition of Dr. Tredgold's work was reviewed on February 17th, 1923 (p. 291). The preface to the new edition reminds us that the book was first published in 1908, and that "during this twenty-one years there has been a markedly increased recognition of the importance of the subject with which it deals both by the medical profession and by the educated laity." It was the subject chosen for consideration by the Section of Medical Sociology at the Annual Meeting of the British Medical Association held at Portsmouth in July, 1923, and a reference to the full and interesting report of the discussion which then took place (*British Medical Journal*, August 11th, 1923, p. 219) may be profitable. The yearly conferences under the auspices of the Central Association for Mental Welfare are further evidence of a deepened and more intelligent concern with the social, medical, and educational problems connected with mental deficiency. Its nature, its varieties, its exact effects, have of recent years come to be more fully understood and appreciated, though it is still a subject on which medical men of some eminence, as well as some laymen, permit themselves to make public dogmatic statements based upon obsolete ideas and statistics that are long out of date. Part IV of the Report of the Joint Committee consists of a description of a detailed investigation made by Dr. E. O. Lewis and some colleagues under his direction in six areas in England and Wales, chosen as representative, and sets out the results and conclusions so arrived at. These should be studied in the report itself, for no summary can do justice to their interest and value, but their importance is indicated by the findings that the incidence figure of mental deficiency is not less than 8.5 per 1,000 population, that this is approximately twice as great as had previously been imagined, and that there can be no doubt that the number of mentally deficient persons is steadily increasing. Parliament has recognized the national importance of the matter, and the need for communal action, in the Mental Deficiency Acts of 1913 and 1927, but effective administration of the law is woefully lacking.

Facts like these make a book such as Dr. Tredgold's all the more necessary and valuable, and the latest figures and statistical tables and the most recent results of authentic research are embodied in the new edition. The general plan of the volume remains the same as in previous editions, but every chapter has undergone a complete revision. Some chapters have been entirely rewritten and their order has been rearranged. Material alterations will be found on a large proportion of the pages, and these have been very carefully and judiciously made. A number of new illustrations have been added. These changes have enhanced the value of a book which was already indispensable to those, whether medical or lay, who wish to have authoritative information and reliable opinions and judgement on the subject with which it deals. It is a book to be read, as well as a work of reference which it would be wise always to have at hand. It is very complete in its survey. The nature and definition of mental deficiency, its incidence, causation, classification, pathology, and psychology are dealt with. The physical characteristics of the different kinds of amentia are described, as well as the diagnosis, prognosis, and treatment of its clinical varieties, and their relation to other forms of mental disease and disorder. Moral deficiency, including the psychological basis of misconduct and the relation of mental deficiency to recidivism, is discussed in an important chapter. The law concerning amentia is set out, and various social questions relating to the education, employment, and general supervision of defectives are adequately considered. The final pages in the section on remedial measures, many of which are new in this edition, may be commended to the special attention of medical men, parliamentarians, and social and educational workers. They embody relatively recent conceptions of the biological causes of mental deficiency, and of its practical and genetic relationship to general mental dullness and instability, and emphasize the bearing of these things upon the questions of sterilization, segregation, and supervision, all of which are likely to be again under discussion in the early future.

In connexion with our review of this standard work we should like to draw attention to an article in the *British Journal of Medical Psychology* (vol. viii, Part IV, 1928) by Dr. Henry Harris on "Mental deficiency and maladjustment." It constitutes, in relatively small compass, a wide survey of such defect and maladjustment from the biological, psychological, and social aspects, which readers will find of great value and suggestiveness.

[1] *Mental Deficiency (Amentia).* By A. F. Tredgold, M.D.Durh., F.R.C.P.Lond., F.R.S.Ed. Fifth edition, largely rewritten. London: Baillière, Tindall and Cox. 1929. (Demy 8vo, pp. xvi + 535; 35 plates. 25s. net.)

ANATOMY FOR STUDENTS.

IN *Surface Anatomy*,[2] *by* Professor ARTHUR ROBINSON and Dr. E. B. JAMIESON, the subject is treated without reference to its clinical implications, the book being primarily intended for students whose work still lies in the dissecting room. Students in their final years, for whom the subject has a more practical importance, must therefore supplement the information given with clinical details obtained elsewhere. The book, however, is far from being concerned solely with surface form or even with the immediately underlying structures on which the form depends. Although perhaps the most obvious departure from the strict letter of the title is to be found in the account of the segmental nerve supply of the skin, many other instances might be given of the broad sense in which the authors interpret the subject.

The text is divided into seven sections, a separate section being allotted to the back. Each section is in turn subdivided into subsections, the structures being considered more systematically than topographically, under such headings as muscles, nerves, arteries, etc. The work is characterized by the thoroughness and accuracy which we associate with such experienced anatomists, and offers little scope for criticism. We note, however, despite the fact that the volume runs to 175 pages, a number of omissions which perhaps might in a future edition receive attention, particularly as several of them have a practical value. No mention is made, for example, of the levator cushion at the orifice of the Eustachian tube, or of the important connexion of the facial vein with the veins in the orbit. The only reference, again, to the important group of lymph glands which lies along the course of the recurrent laryngeal nerve is the statement that "small scattered glands lie on the front and sides of the trachea and larynx." A few of the illustrations, we regret to say, fail to reach the high standard to which we are accustomed in modern textbooks, and particularly in those published by the Oxford University Press. In Figure 21 the terminal part of the duodenum appears to pass in front of the transverse colon; in Figure 26 the continuity of the pulmonary artery with the infundibulum of the right ventricle is not apparent; in Figure 35 the cervical enlargement is shown too low and too localized; a carelessness is shown in the delineation of the bones of the foot in Figures 30 and 31. These are, however, minor blemishes; a more serious fault, in our opinion, lies in the dissociation of surface anatomy from applied anatomy and skiagraphy, whereby the subject is robbed of its main interest and value.

In Part IX of *Baillière's Synthetic Anatomy*[3] Dr. CHEESMAN continues his series of anatomical drawings on transparent sheets, his purpose being, as is probably now

[2] *Surface Anatomy.* By Arthur Robinson, M.D., F.R.C.S., and E. B. Jamieson, M.D. Oxford Medical Publications. London: Milford, Oxford University Press. 1928. (Roy. 8vo, pp. vii + 175; 38 figures. 15s. net.)

[3] *Baillière's Synthetic Anatomy.* By J. E. Cheesman. Parts IX and IXA. Baillière, Tindall and Cox. 1928. (7½ × 9; each part contains 12 plates and costs 2s. 6d.)

well known, to assist the student to reconstruct the various regions of the body by the superposition of drawings made on successive planes. In the part under notice Dr. Cheesman supplies drawings of the head and neck, while in Part IXA he provides a supplement in the form of drawings of the pterygo-maxillary region, on an enlarged scale. Owing to the multiplicity of the structures therein, and still more to the irregularity of the numerous planes in which they lie, the head and neck present difficulties sufficient to daunt anyone with less patience or skill than Dr. Cheesman. It is not surprising, therefore, that he has not altogether succeeded in maintaining in this volume the standard of his previous work. Nevertheless, with the exception of Figure 8 in Part IX, where the vertebral column appears to us to be unduly rotated, the figures are, generally speaking, both accurate and clear, and we congratulate Dr. Cheesman on the satisfactory completion of another chapter of his original and ingenious work.

FRACTURES.

THE appearance of a second edition of *Fractures and Dislocations*[4] by PHILIP WILSON and W. A. COCHRANE in four years shows that the merits of the book which we reviewed in our issue of May 16th, 1925 (p. 928) have been appreciated. Since then Mr. Cochrane's experience in Edinburgh has increased and the second edition is less an exposition of American practice than the first. Our good opinion of this book remains unaltered, and we only regret that we cannot put on record a greater advance in this country in the direction of the organization of fracture departments of hospitals on the Massachusetts model, to which the treatment of fractures in Boston owes so much. This revised edition contains the same number of pages as the first, but there are fifty-one more illustrations.

The recent articles and letters in the *British Medical Journal* on the treatment of Colles's fracture led us to refer to the section on this subject in Messrs. Wilson and Cochrane's book. As Mr. Cochrane recently stated in our columns, he considers that a frequent complication of this fracture of the radius is a partial luxation of the lower end of the ulna. We have turned to the new edition in the hope of finding a more detailed and exact definition of his meaning, but we are still uncertain as to what is meant by luxation of the ulna in this connexion. The unbroken ulna might have lost its normal relation with the triangular fibro-cartilage and carpus; in which case it would be more correct to say that the luxation was one of the carpus. Or, as nearly always happens in this fracture, the lower ends of the ulna and radius might have lost their normal relative positions, but in such a case it is the fractured radius which is luxated and not the ulna. Any abnormality in the position of the lower end of the ulna as regards the carpus and lower end of the radius should surely be described as a luxation of the fractured bone, and not as one of the uninjured bone of which the relations with the rest of the forearm are undisturbed. The point is one of more than mere words and names. The question involved is one of principle, on which much depends. The attention of the student should not be diverted to a supposed luxation of the ulna, when the need of the moment is the restoration of the lower end of the radius to its normal relationship with the rest of the forearm, of which the lower end of the ulna is but a part.

THYROID SECRETION.

Thyroxine,[5] by Professor E. C. KENDALL, is the latest contribution to the American Chemical Society Monograph Series. Anything written by this author on this subject is of great interest and importance; and the volume constitutes an authoritative summary of our present knowledge concerning the chemistry and physiology of thyroid secretion. The chemical section is, of course, of particular interest, and a full account is given of the author's own work, which laid down the foundations of our knowledge of this subject, and of the work of Harington, which solved the problem of the chemical nature of thyroxine, and led to its synthesis. The physiology of the thyroid is dealt with fully, and a very great amount of information has been collected, but this section would be made clearer by more careful arrangement of the subject-matter.

The author, in a brief discussion of the clinical aspects of his subject, remarks that many of the problems of greatest clinical interest are undecided. Whether the toxic effects in exophthalmic goitre are due to an excess of normal secretion or to the formation of an abnormal secretion is considered to be uncertain. In this connexion we note with interest that the author believes that at least three kinds of organic iodine compounds are present in the normal gland. The bulk of the iodine is in a form which is physiologically inert. The proportion present as thyroxine is always less than 15 per cent. of the total iodine content. Some glands which contain no thyroxine are nevertheless physiologically active, and therefore Kendall believes that thyroxine is an intermediate product, and that before it exerts a physiological action it passes into some slightly altered form which he terms "active thyroxine." The beneficial action produced by minute doses of iodine in exophthalmic goitre is described, but it is concluded that at present we do not know how this comes about.

The letterpress comprises only 230 pages, and is followed by a bibliography of 541 references. These figures indicate that all discussion has been reduced to a minimum, and the volume is chiefly occupied by the description of the results that have been obtained. The reader is, however, helped greatly by short summaries at the end of each chapter, in which the author states what appear to him to be the outstanding conclusions that may be drawn from the evidence available. The fact that the author is a leading authority on his subject makes these summaries of particular interest.

SURGERY IN THE TROPICS.

IT is a pleasure to welcome two such books as *Tropical Surgery and Surgical Pathology*,[6] by Major K. K. CHATTERJI, and *Surgery in the Tropics*,[7] by Sir FRANK P. CONNOR, for they are certainly needed, though some might not realize it. Doubtless, a good surgeon will do good work anywhere, but his best cannot be achieved without a working knowledge of local diseases and conditions, and it is just such information that these books convey, as far as writings can do. An experienced surgeon will appreciate this proviso, while the tyro may safely be guided by the rules and methods set forth.

In the introduction to *Tropical Surgery* Major Chatterji mentions that he is handicapped by writing in a foreign language; we could wish that this same language held no greater handicap for many of those who learnt it at their mother's knee, for the clarity of the exposition alone makes the book worth reading. Definite and minute instructions are given for various operative procedures as well as general measures. Some notes upon blood transfusion and upon protein shock might have found a place, and it was with surprise that we failed to find climatic bubo in the index. The book deals more particularly with the graver surgical conditions, major operations, and the scientific aspect of disease, so that it will be of more use to the experienced surgeon with every hospital facility found in the big towns, and to the student in his final year, than to the isolated practitioner endeavouring to carry on the art of healing to the best of his ability and circumstance. The volume includes a foreword by Sir Havelock Charles and a useful bibliography; it is profusely illustrated, and numerous coloured plates are given. Indeed, the author and publishers are to be congratulated upon the

[4] *Fractures and Dislocations.* By Philip D. Wilson, M.D., F.A.C.S., and William A. Cochrane, M.B., Ch.B., F.R.C.S.Ed. Second edition, revised. London: J. B. Lippincott Company. 1929. (Med. 8vo, pp. xvii + 783; 1029 figures. 45s. net.)

[5] *Thyroxine.* By Edward C. Kendall, M.S., Ph.D., D.Sc. American Chemical Society Monograph Series. New York: The Chemical Catalog Company, Inc. 1929. (Med. 8vo, pp. 265; 39 figures. 5.50 dollars.)

[6] *Tropical Surgery and Surgical Pathology.* By Karuna K. Chatterji, F.R.C.S.I., Major I.T.F. Medical Corps. With a foreword by Major-General Sir R. Havelock Charles, G.C.V.O., K.C.S.I., etc. London: J. Bale, Sons and Danielsson, Ltd. (Demy 8vo, pp. xxx + 244; 134 figures. 16s. net.)

[7] *Surgery in the Tropics.* By Sir Frank Powell Connor, D.S.O., F.R.C.S. Churchill's Empire Series. London: J. and A. Churchill. 1929. (5¼ × 8¼, pp. ix + 293. 99 figures. 12s. 6d.)

production of such a well turned out book at a reasonable price.

In *Surgery in the Tropics* Sir Frank Connor has achieved a most readable and helpful book of a very convenient size, and his method of discussing the surgical possibilities of most tropical diseases is at once stimulating and valuable. He avoids too great detail, yet a little more might be appreciated; for example, the points for and against the closure of a caecostomy, together with the chances of bowel stenosis and failure, might well be discussed. We note the faint praise accorded to lymphangioplasty, but scarcely expected even so much. The book is well illustrated and has a useful appendix, and from first to last the subject is covered in a most practical manner, so that this work should find a prominent place in the library of every practitioner in the tropics. We look forward to seeing a second edition in the near future.

DARWIN AND DARWINISM.

IT might seem that at this time of day there could be no possible need to write another life of Charles Darwin. However, during the last five-and-twenty years there has been considerable criticism, not unmixed with misrepresentation, of Darwin and Darwinism, and HENSHAW WARD'S *Charles Darwin*[8] may therefore be regarded as timely. It is a well-written narrative, designed ostensibly to display what the author holds to be the chief meaning of Darwin's career, "that the result of his fifty years of observing nature was to teach the world not to rely on speculation." Some may consider that this fact had already been driven home by Bacon, Newton, Harvey, Hunter, and others, but there is no doubt that Darwin affords a brilliant example of the value of accurate observation, and this aspect of his life is emphasized over and over again in the author's book. But considerable space is also devoted to an explanation of Darwin's relation to the various theories on the nature of species which were current at the time, and as the facts are stated with much impartiality this may be considered to be the most interesting part of the book. The Mosaic idea of the stability of species prevailed generally, although some scientists—Lyell, for example—recognized that variations due to natural causes might arise within a species and cause structural resemblances to other species, simulating a genetic relationship. Buffon went so far as to admit that the resemblances were so striking in many cases that the theory of a genetic relationship would quite well serve as an adequate explanation. But there was an alternative, and this he adopted. "It is certain," he writes, "from revelation, that the original pair of each species issued full-formed from the hands of the Creator." It has been suggested that this plain statement was mere sarcasm; if this is so it becomes impossible to accept any of Buffon's statements with a feeling of security. Lamarck went further: he believed in the mutability of species as adumbrated by Buffon, but he also made an original contribution to the problem in the shape of a theory of the evolutionary process. He supposed—without adducing any considerable body of facts in support of his supposition—that the needs of animals entailed structural alterations in response to alterations in the environment; thus, since circumstances rendered it necessary for the giraffe to reach up to the trees for food, the animal's neck would become gradually stretched in the effort, and the resulting elongation would be transmitted to the offspring. If such reasoning were all that could be said in support of the theory of evolution, one would fain go back to the old Mosaic doctrine of creation, which at least had the merit of being a fine conception. It was at this stage that Darwin began his indefatigable labours and—with a hint, perhaps, from Malthus—developed his theory of evolution through variation and natural selection. The theory has the ring of truth in it, and it has altered and ennobled our whole conception of life. While admitting its truth, no one is called upon to admit that it is the whole truth; and Darwin himself has stated that "of course, my natural selection is not the only factor in evolution"—a circumstance which is sometimes forgotten in discussing Darwinism. The new theory was bound to come into collision with stereotyped beliefs. Hence the absurd meeting at Oxford—reminiscent in a minor degree of the final meeting of the Stanislow Society described in Bret Harte's poem—at which the bishop proposed to "smash" Darwin, and Hooker claimed to have "smashed" the bishop. Darwin would derive small satisfaction from sentiments of this kind; "the theological view of the question," he said, "is always painful to me. I am bewildered."

[8] *Charles Darwin. The Man and His Warfare.* By Henshaw Ward. London: J. Murray. 1928. (Demy 8vo, pp. 472, 27 plates. 21s. net.)

NOTES ON BOOKS.

WHEN in 1927 (July 9th, p. 61) we reviewed the first edition of Dr. SAMSON WRIGHT'S *Applied Physiology*, we commented on the amount and value of the information it contained and the attractive manner in which it was presented. The second edition,[9] recently published, appears to include the whole of the material in the first, revised and brought up to date, and a considerable number of sections dealing with fresh subjects. The work fulfils the needs of the practitioner seeking to correlate his clinical work with its underlying physiological principles, no less than those of the advanced student reading for higher medical degrees and diplomas.

In Fractures of the Upper End of the Humerus[10] Dr. GIAN CARLO PERACCHIA describes the normal anatomy of the parts concerned and the pathology of fractures in the same region. The work is well illustrated with radiograms, photographs, and drawings, and the results of treatment are set forth. While he considers that bloodless treatment should be the rule for these injuries, he recognizes and describes cases in which open operation and nailing or plating must be necessary. The book is well got up, and will be useful to readers of Italian, although it contains no startling new departure.

In *Nouveau Précis de Bactériologie*[11] Drs. DELATER and GRANDCLAUDE give us the course of instruction in bacteriology held in the dental schools of Paris. It consists of ten lectures and eleven practical classes; the latter part is profusely illustrated with coloured pictures which may well prove helpful to the student in remembering the cultural characteristics of the commoner organisms. It provides a clear and concise elementary introduction to the subject, but, covering as it does a wide ground, it is disappointingly brief in its treatment of the bacteriology of the mouth and its application to dental pathology: more work has been done on this subject than might be supposed from the nine pages here devoted to it.

[9] *Applied Physiology.* By Samson Wright, M.D., M.R.C.P. With introduction by Swale Vincent, M.D., LL.D., D.Sc., F.R.S.Ed. and Canada. Second edition. London: Milford, Oxford University Press. (Demy 8vo, pp. xxvi + 510; 108 figures. 18s. net.)

[10] *Le Fratture dell' Estremità Superiore dell' Omero.* Dott Gian Carlo Peracchia. Bologna: L. Cappelli. 1928. (Sup. roy. 8vo, pp. 164; 152 figures. L.25.)

[11] *Nouveau Précis de Bactériologie.* Par G. Delater et Ch. Grandclaude. Paris: Gauthier-Villars et Cie. 1928. (Roy. 8vo, pp. vi + 124; 55 plates. 45 fr.)

PREPARATIONS AND APPLIANCES.

STEEL-CUTTING FORCEPS.

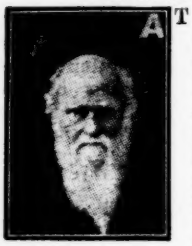
MAJOR MEURICE SINCLAIR, C.M.G., R.A.M.C.(ret.), W.1, writes: The very powerful and compact steel-cutter here illustrated divides (with limitations) all metals from steel plates to silver wire, and does so with a minimum of muscular effort. It is useful to have such an instrument at hand while undertaking bone operations, since unfortunately every fracture does not fall into the preconceived plan of fixation. It is an asset to have an instrument which cuts cleanly screws, plates, wire stays, bolts, and wire, and so readily facilitates gaining an objective neatly, more especially if the operation is lengthy.

The blades are set at an angle to the handles in order to allow the actuating hand, when cutting within the tissues, to be placed out of the line of vision. After having wired the fragments of bone together, the cutter readily allows one, in a deep wound, to see, and at the same time to cut off, the surplus twisted wire with a single effortless movement, and, moreover, without ever having to resort (as one often has to do with a less powerful instrument) to those rocking and flexing movements to break off the twist; these only tend to loosen the hold, and may be prejudicial to an otherwise good mechanical result.

The instrument is made for me by Down Brothers, Limited, London.

CHARLES DARWIN'S HOME.

OPENING CEREMONY AT DOWN HOUSE.



AT the meeting of the British Association in 1927, Sir Arthur Keith, as President, made an appeal for the preservation of Down House, in the county of Kent, as a memorial to Charles Darwin, who lived there from September 14th, 1842, until his death on April 19th, 1882. As recorded in our issue of September 10th, 1927 (p. 464), an immediate response to this appeal came from Mr. George Buckston Browne, F.R.C.S., F.S.A., who undertook to make himself wholly responsible for buying the estate and establishing a fund for its upkeep, in order to permit future generations to visit Darwin's home. Having acquired the property, Mr. Buckston Browne offered to transfer its possession to the British Association under the most liberal conditions, and with an endowment for its maintenance for all time. His desire was that Down House should be regarded as a gift to the nation, and that the British Association should use the building and grounds for the benefit of science. The General Committee of the Association thereupon authorized its President to accept with gratitude this munificent offer.

During the past six months Mr. Buckston Browne has fully restored the whole building and brought back the ground floor rooms—particularly the "old study" in which the *Origin of Species* was written—as far as possible to their condition in Darwin's time. Members of the Darwin family and other friends have generously co-operated in the work of restoration in order that the furniture and decoration of the lower rooms of the house might call to mind the surroundings in which Darwin thought and wrote for the greater part of his working life. The donor has devoted himself also to getting together the nucleus of a Darwin Collection for Down, and commissioned Mr. John Collier to paint replicas of his portraits of Darwin and Huxley to be hung there.

DOWN HOUSE FROM THE SOUTH.

The formal opening of Down House as a public memorial to the great naturalist took place on the afternoon of Friday, June 7th, when a large and distinguished company attended a garden party given by the President (Sir William Bragg) and officers of the British Association in the grounds of this secluded country house on the chalky Kentish uplands. The ceremony was held on the lawn under the presidency of Sir WILLIAM BRAGG, at whose invitation Mr. BUCKSTON BROWNE formally presented the house into the keeping of the British Association, and gave a brief address. Darwin, he said, influenced the mind not only of his own generation, but of the whole world for all time. Like Shakespeare, he was so great that he required no monument, but it might be permitted to them to preserve and keep sacred the house that sheltered Darwin and the things he handled and the grounds he walked on. This it had been his great privilege to be allowed to accomplish, with the willing assistance of Major Leonard Darwin (only surviving son of Charles Darwin) and other members of the family.

Sir WILLIAM BRAGG, in accepting the property as a national memorial, expressed the gratitude and appreciation of the officers of the British Association, not only for the gift itself, but also for the immense pains taken by Mr. Buckston Browne in supervising personally the work of restoration.

Sir ARTHUR KEITH then, at the President's request, declared Down House open to the public. They were assembled, he said, at a place which enshrined the personality of a great man, whom they were justly proud to claim as English through and through. Their distant successors would be proud of it, not so much perhaps on account of the books which were composed and written within its walls, but rather because of the personality of the man who wrote them—a man both good and great. It was right to stress this personal aspect of Darwin's life: he was an English gentleman, gentle and modest almost beyond parallel, living and loved in his home as few men had been; thoughtful for his community, just and charitable, even to those who sought to brand him as an enemy of mankind. Unwittingly Darwin had made these few acres of upland an international possession; in these grounds and within these walls were slowly hammered out new doctrines, which had penetrated to the ends of the earth, giving humanity a new interpretation of living things and its relationship to them. In entrusting his gift to the British Association Mr. Buckston Browne had made no stipulations, for he did not wish Darwin's home to be bound by the dead hand of the law. He had expressed, however, three personal wishes: that the house and grounds should be maintained as nearly as possible as Darwin knew them; that visitors, irrespective of nationality or creed, should be given free access to the public rooms and grounds; and that the officers of the British Association should use Down House to advance the cause of science in such manner as they thought best. In conclusion, Sir Arthur Keith recalled the profound impression made upon him by his first visit to that place, when he obtained a background for a mental picture in which the living Darwin moved, experimented, and thought. It seemed to him that a student would never know Darwin until he knew Down. Science could not be separated from personality. In making this place a national heritage they were acknowledging that sentiment had a place in science—not in the work of the laboratory, but in the heart of the scientific worker. They were not dedicating a monument to Darwin's memory, for he needed none; his works would outlast anything they could build in stone. They were giving way to a sentiment, an impulse, which was deeply implanted in human nature.

Dr. R. ANTHONY, professor of comparative anatomy at the National Museum of Natural History in Paris, briefly conveyed the congratulations of French science; and Dr. JOSEPH LEIDY, speaking on behalf of American science, recalled that Darwin was elected a corresponding member of the Philadelphia Academy of Natural Science immediately on receipt of the first edition of the *Origin of Species* in America. Among the congratulatory messages read by the President was one from Professor Henry Fairfield Osborn, President of the American Association for the Advancement of Science. A sympathetic article by Professor Osborn on the restoration of Darwin's House at Down appears in the issue of *Science* for May 24th.

An important part of the afternoon's proceedings was the pious pilgrimage made by every visitor to the kitchen garden and experimental greenhouses, and to the plantation with its "sand-walk," where Darwin paced up and down every day swinging his iron-shod stick and meditating on his work.

Charles Darwin was the son and grandson of medical men, and the estate at Down was purchased for him by his father, Dr. Robert Waring Darwin of Shrewsbury. He himself studied medicine for a time, and his third son and biographer, Sir Francis Darwin, was a graduate in medicine. A member of our profession made the first public appeal for the preservation of Down House, and another has with splendid generosity carried through the project. It was appropriate, therefore, that at the open-

ing ceremony the principal speeches were made by Sir Arthur Keith and Mr. Buckston Browne, and that the company included Sir John Rose Bradford, President, and Sir Thomas Barlow, Past-President, of the Royal College of Physicians of London, and Sir John Bland-Sutton, Past-President of the Royal College of Surgeons of England. In conclusion, we may note that Mr. Buckston Browne represents the fifth medical generation of his family, the first of the line having been Dr. Theophilus Browne of Derby, who was a fellow townsman and contemporary of Dr. Erasmus Darwin, grandfather of Charles Darwin.

EARLY TREATMENT OF SYPHILIS.

THE most recently issued report (No. 132) of the Medical Research Council relates to the treatment of syphilis, and, as we indicated last week when briefly announcing its publication, Colonel L. W. Harrison has directed attention to some points of great practical interest. The importance of commencing the treatment of syphilis as soon as possible has always been emphasized, but there has long been a suspicion that such early treatment may at times be unexpectedly ineffective as regards the prevention of the later sequels, and a definition of the limits of "earliness" is obviously desirable. Then, again, individual idiosyncrasy must be recognized as a by no means negligible factor, and renders it difficult to foretell how any particular patient will respond to treatment. The diversity of therapeutic methods in common use is an obvious indication that much remains to be learnt as regards the most suitable procedure, for, although more than 260,000 cases of syphilis have now been dealt with in treatment centres in England and Wales, very little attempt has been made to classify the results in relation to the kind of treatment adopted.

Colonel Harrison has surveyed the clinical records of all male cases of syphilis seen for the first time in the St. Thomas's Hospital venereal diseases department from January, 1920, to the end of March, 1926, and kept under observation till the end of June, 1927. His report consists of two parts. The first of these, which occupies the bulk of the booklet, reviews the results of treatment. Thus, different arsenobenzol compounds are compared as regards their effect on the Wassermann reaction; mercury is contrasted with bismuth in respect of its adjuvant effect; the responses of patients in different stages of syphilis to a single and to two courses of treatment are compared; and an attempt is made to assess the prognostic value which can be attached in early cases of this disease to the serological response to the first two courses of treatment. The incidence of relapses is considered, with special relation to involvement of the central nervous system, and the necessity of examining the cerebro-spinal fluid. Mention is made of the apparent possibility in a few cases of eradicating syphilis with very little treatment. In the short second part of the report Colonel Harrison deals with the sites of primary syphilitic lesions, and the occupations and ages of patients. It appears that extragenital syphilis is less common in Great Britain than was previously suspected on the basis of returns received from certain Continental countries.

Comparison of Therapeutic Methods.

Colonel Harrison comments on the regrettable differences of practice as regards treating syphilis which prevail at present; he suggests that it is greatly to be desired that those who are dealing with large numbers of cases should endeavour to take stock of their results and support their opinions by statistical evidence. He remarks that the result of treatment depends in very great measure upon the stage of the disease in which it is started, and that, consequently, different lines of treatment can only be legitimately compared by studying their effects on patients whose infections are within much the same narrow limits of duration. It is also necessary, in his opinion, to take into account the time over which a given total dosage has been spread, as well as the sizes of individual doses. To reach any reliable conclusion as to the requirements for eradicating syphilis from persons in different stages, it is essential to study the results of administering different total dosages in approximately the same time intervals to patients in much the same stages of the disease.

In his survey at St. Thomas's Hospital the following rules were observed in classification. A course of treatment must consist of not less than 5 grams of arsenobenzol compounds (except in the case of silver salvarsan) in conjunction with a minimum of 5 grams of mercury or 2 grams of bismuth, the course being continued for not more than four months. To qualify for admission to the category of "cases treated with two regular courses" the patients had to have received such a first course as defined, and have started the second course within three months of the end of the first course, completing it not more than four months later. To estimate the immediate effect of a course of treatment it was held essential that the blood tests should have been performed within one month of completion of the course. The Wassermann test method employed was No. 1 in the Medical Research Council's Special Report (No. 14).

Comparison in this way of different arsenobenzol brands, as judged by the effect produced by one course, led Colonel Harrison to the conclusion that no one brand was outstandingly better than any other. So far as can be judged by the serological effect of a single course of an arsenobenzol compound with mercury, as compared with one in which the compound was associated with bismuth (in an admittedly small number of sero-positive primary and early secondary cases) the adjuvant effect of the bismuth compound employed did not appear to be greater than that of mercury. The possibility is recognized, however, that the best bismuth preparation may not have been used; it is admitted also that bismuth therapy has distinct advantages over mercurial treatment in respect of tolerability.

Prognostic Considerations.

Comparison of the response to one and to two courses of treatment in different stages of syphilis is indicated by two tables. The effect of treatment is shown to diminish proportionately as the disease increases in duration, and thus the value of beginning remedial measures early is clearly indicated. Spacing out the injections of arsenobenzol compounds in small groups of doses separated by intervals each of one month seems to be a useful procedure; no jaundice or dermatitis resulted in Colonel Harrison's series. It seems probable, however, that no particular combination of dosage and intervals will ensure 100 per cent. of negative reactions in cases which have already become serologically positive. Patients who did not respond to the first course of treatment continued positive in greater numbers than those in which the reactions had been reduced by treatment to weak positive or negative. The after-histories of the cases left with weak positive reactions after the first course did not appear to be worse than those of cases which ended the first course with negative or weak Wassermann reactions.

Colonel Harrison draws the important conclusion that the more or less unsatisfactory after-histories of a number of those patients who were negative at the end of the first course and received regular treatment subsequently show that even the attainment of a negative reaction by such a first course is by no means a guarantee of its maintenance, even under regular treatment. Still, the fact remained clear that the outlook for primary cases treated while still sero-negative appeared to be distinctly better than in the case of those which were sero-positive at the beginning of treatment, even when these became negative at the end of a single course. Another valuable point noted is that the incidence of recurrent chancre points to the importance of local treatment of all primary sores.

Colonel Harrison concludes (1) that in sero-negative primary cases a completely satisfactory percentage of cures cannot be expected from less than two full courses as defined by him; (2) in sero-positive primary and early secondary cases even three full courses do not afford a sufficiently satisfactory percentage of permanently negative reactions; (3) most relapses in the early stages occur in the first year, only a very small proportion developing after the second year; (4) while in some cases a very small amount of treatment appeared to have sufficed for the eradication of the disease, in other cases considerable amounts failed though administered regularly.

British Medical Journal.

SATURDAY, JUNE 15TH, 1929.

THE MEDICAL PROFESSION IN PARLIAMENT.

WITH the declaration of the poll for the Scottish Universities on Monday last, it has become possible to review completely and accurately the position of the profession of medicine in the new Parliament. In the House of Lords Lord Dawson has received the very welcome reinforcement of Lord Moynihan. Recent experience has shown that knowledge, reasonableness, and persistency combined can produce in that House great effect for the public good, even though the number of the advocates be small, and it would be difficult to imagine a more persuasive union of those qualities than in the two medical peers.

There are now eighteen registered medical practitioners who are members of the new House of Commons, as against thirteen in the old. They were all elected, of course, primarily as politicians, and all save one as party politicians. Dr. Graham Little, whom we may congratulate on the decisive nature of the result in his case, sits as an independent member for London University. We may be permitted also to endorse his opinion that a certain freedom from party ties should mark a member for a university, into whose election there may well enter some considerations different from those which are paramount in constituencies of the ordinary type. Arguments not without weight can be adduced in favour of the establishment of a second chamber on a vocational basis, but none of them are applicable to the House of Commons, where all members must be representative of their constituencies, and not of their profession, trade, or occupation. Nevertheless it is highly important that experience in different walks of life and in many vocations should, in fact, be represented there; and now that matters of public health and education, and important social questions in relation thereto, are so prominent in the public mind and in parliamentary discussion, it has become of great moment that medical knowledge and the medical point of view should receive adequate presentation and proportionate consideration. These they have not always received; nor, indeed, are they easy to secure.

It is well, therefore, that the medical members of the House of Commons are found among the three political parties in numbers not wholly out of proportion to the strength of those parties in general; but it is to be hoped that what in some quarters in the past has seemed to be a too narrow and rigid interpretation of what party loyalty involves may not interfere with the valuable service which the medical members, as individuals and as a group, may render to their profession as well as to the public whom they represent. It is well-nigh impossible that members elected on quite different grounds should reflect with absolute correctness the views of the profession as a whole or as an organized body, and it will certainly be found, in this as in previous Parliaments, that several of the medical members will express opinions about some matters relating to hospital management or the organization of health services which are entirely unrepresentative of those of their profession at large. The danger is that such expression may be taken as being more representative and authoritative than it is. In this connexion we would record our great regret at the defeat of Sir Richard Luce, whose work and services have been very valuable and much appreciated, and who was in a better position than any of his colleagues to gather the views of the organized profession. There will, however, be compensation for this if the medical members will all associate themselves with the Parliamentary Medical Committee, and if that committee be kept in close touch with the profession outside. Dr. Fremantle, Dr. Vernon Davies, and Dr. Drummond Shiels have been very helpful in this way, and such help may be expected to continue, though this may be affected by the appointment of Dr. Shiels to a post in the Government as Parliamentary Under Secretary for India. We offer our congratulations to him and to Dr. Christopher Addison, who returns to the House of Commons and to office as Parliamentary Secretary to the Ministry of Agriculture. Perhaps it may not be too much to hope now for help on the Parliamentary Medical Committee from Dr. W. E. Elliot, freed from the claims of office. A very welcome recruit should be found in Dr. Ethel Bentham, whom we congratulate as the first medical woman to enter Parliament. Mr. Somerville Hastings, too, resumes a seat which he formerly occupied; and among the newcomers are Dr. Joseph Hunter and Dr. Morris Jones. Professor Thomas Sinclair, by an unopposed return, continues to represent the Queen's University, Belfast, and so maintains, along with his lay colleague Sir Hilton Young, the personal connexion between the House of Commons and the General Medical Council. Of the unsuccessful candidates, we may specially regret, in addition to Sir Richard Luce, Dr. Haden Guest, who, however, is certain to reappear. Dr. R. A. Lyster and Dr. Stella Churchill would have represented an earnest section of the public health medical services, as would also, perhaps more widely, Dr. James Kerr.

It is understood that the Parliamentary Medical Committee is so constituted that M.P.'s for the universities, whether medical or lay, are members of it. This has proved to be a very wise and valuable arrangement. The personnel in this respect has been altered by the election of Miss Eleanor Rathbone as an independent representative of the combined English Universities. Her interest in social and family welfare, with which the medical profession is so intimately concerned, is well known. We would suggest that the committee might be appropriately strengthened by the inclusion of Sir Hilton Young, as a member of the General Medical Council.

In conclusion, we are confident that the medical profession, while feeling regret at the loss of the zeal and understanding of Mr. Neville Chamberlain, will sincerely welcome to their duties the new Minister of Health, Mr. Arthur Greenwood, and Miss Susan Lawrence, his Parliamentary Secretary. Mr. Greenwood is not without experience of the Ministry, having been Parliamentary Secretary in 1924, and will no doubt maintain the custom now established of conference with the profession on all occasions when they are concerned or likely to be of service.

PHYSIOLOGY IN RELATION TO PRACTICAL MEDICINE.

THE examination system, however necessary it may be, has long been recognized as an evil, not only by the victims, but by their teachers and by broad-minded educationists. Most students of medicine naturally concentrate their attention on the best way of satisfying the demands of the examiners, which militates against the acquisition of a sound knowledge of their subject of study. It has indeed been thought, and probably with good reason, that many of the ablest students are in one way or another the greatest sufferers from examinations. Furthermore, the curriculum is partitioned off into watertight compartments by periodical examinations, so that when the successful candidate gains his entrance to the pathological laboratories and the wards, he may fancy that biology, including therein anatomy and physiology, has become a thing of the past. With the lengthy and crowded state of the curriculum there is thus a real danger that in the final stages of his clinical work the student's memory, not only of the details, but of the principles of the underlying sciences, will have become dim and confused. The importance of correlating the subjects of medical education and of continuing instruction in the earlier sciences throughout the clinical years is now fully recognized, and in order to ensure that anatomy shall be applied, and that the student shall think physiologically and in terms of biochemistry, special courses have been recommended, and have been provided during the clinical years in the medical schools, though no doubt to a varying extent in different centres.

The era of morbid anatomy in the last century, when structural change was regarded as the cause and convincing proof of disease, has been superseded by the general attention paid to the diagnosis and methods of investigating disorders of function. Thus, the late Sir James Mackenzie laid down the principle that the vast majority of the symptoms of disease are disturbances of normal reflexes. The close relationship of physiology and its offspring biochemistry with pharmacology and therapeutics, pathology, and experimental medicine has ceased to be a new idea. The state of opinion is shown by the number and success of comparatively recent books dealing with the relations of physiology and practical medicine. Thus, to mention some works by British authors only, we have Dr. Robert Hutchison's *Applied Physiology* (1908), Dr. W. Langdon Brown's *Physiological Principles in Treatment* (1908, fifth edition 1924), Mr. A. Rendle Short's *The New Physiology in Surgical and General Practice* (1911, fifth edition 1922), Dr. Sampson Wright's *Applied Physiology* (1926, second edition 1928), Professor R. J. McDowall's *Clinical Physiology in Relation to Modern Diagnosis and Treatment* (1927), and the most recent of all, *Elementary Medicine in Terms of Physiology* (1929), by Dr. D. W. Carmalt-Jones, consulting physician to the Westminster Hospital and professor of systematic medicine in the University of Otago, New Zealand.

The best way of correlating physiological principles with the manifestations of disordered function is open to discussion, and possibly the most successful solution may be provided by the concurrent employment of different methods, such as separate courses of applied physiology by the physiological lecturers, and constant emphasis on the relation of physiology to symptoms in the course of their ward rounds by the clinicians, who must therefore have an up-to-date knowledge of the subject. In view of the greatly increased amount to be learnt by the present-day student it has been suggested—from a strictly utilitarian point of view, and perhaps with insufficient imagination of what developments in the future may bring within the range of practical medicine—that anatomical and physiological teaching should be regulated by the existing needs of the clinicians. To quote a somewhat extreme position, it appears to have been proposed in the United States of America that the clinician should examine the students in their knowledge of the pre-clinical subjects. This suggestion was slyly countered by Professor C. J. Wiggers[1] of the Western Reserve University, Cleveland, Ohio, with the alarming comment that, for the benefit alike of the students and the clinicians concerned, such clinical examiners should periodically be required to furnish evidence, by examination or otherwise, that they are masters of the subject they attempt to adjudicate upon. But a good deal can and has been done by introducing into biological work types of protozoa and animals met with in the study of disease, and by illustrating normal physiology—for example, of the nervous system—by patients showing the results of inhibition or abolition of the normal conditions. Further, the use of laboratory methods in demonstrating normal function can be extended to, and illustrated by, abnormal and artificially induced conditions of function which in turn can be correlated with conditions of disease in the human subject.

It is, of course, impossible to exaggerate the importance of applied physiology in the art of medicine; the two influence and benefit each other. In the past, more than in the present, medicine helped physiology; but the debt of medicine to the experimental method is ever increasing, so much so, indeed, as to narrow or even to obliterate any line of division between applied physiology or experimental medicine and the science and art of medicine. The closer the correlation between the two, and the more intimately the physiologists and the physicians work together and pool their knowledge, the more will medicine approach an exact science.

PREVENTION OF FIRE IN X-RAY DEPARTMENTS.

SOME obscurity still exists as to the nature of the heavy brown fumes which were liberated as the result of the explosion that occurred at the Cleveland Hospital, Ohio, on May 15th. That they were fumes of bromine with hydrocyanic acid was suggested by the coroner's statement (recorded in our issue of May 25th at page 963) to the effect that poisoning by these gases had been proved to be the cause of death in a number of the victims. It is probable, however, that the fumes consisted in large part of carbon monoxide and nitrogen peroxide, combustion products of nitrocellulose, the material used in the manufacture of the inflammable type of film. Not only is the amount of silver bromide in films relatively small, but it is improbable that bromine would have been liberated in the toxic quantities reported from so stable a compound. While, however, it may be argued that only an academic interest attaches to the composition of the liberated gases, there is no doubt that, so long as the inflammable type of film is used, protection against the hazards of fire is of immediate practical importance. In a letter published in our issue of June 8th (p. 1057) the *X*-Ray and Radium Protection Committee now investigating the latter problem in this country made the following provisional recommendations: (1) care should be taken to ensure that *x*-ray films are handled in such a manner as to reduce to a minimum the danger of fire; (2) films should be stored in filing

[1] Wiggers, C. J.: *Journ. Amer. Med. Assoc.*, Chicago, 1928, xci, 270.

cabinets or cupboards, leaving as few as possible lying open for reference; (3) on no account should smoking or naked lights be permitted near any film store; (4) in institutions where considerable numbers of films may be accumulated arrangements should be made for a special store, preferably isolated. With these recommendations it is interesting to compare those made by Mr. R. D. Hobbs of the Western Actuarial Bureau, Chicago, who, in an article in the November, 1928, issue of *The Modern Hospital*,[1] reported a fire which broke out in a room used for storing films and x-ray equipment in the Memorial Hospital, Albany, New York. Unexposed films, Mr. Hobbs suggests, should be stored in containers constructed of lead, or lead-lined, on shelves two feet above the floor, or in double wall cabinets, vented to the outside air. The amount of unexposed films in standard containers kept outside the fireproof vaults should not exceed 50 lb., and all films should be transferred to storage as quickly as conditions permit. In discussing the use of the so-called non-inflammable films—which, in fact, are inflammable, though they burn slowly and without the production of poisonous gases—he points out that their disadvantages are increased cost and a tendency to roll and curl, and draws the conclusion that property and lives may be endangered to facilitate handling and filing. The floor and walls of storage vaults should, he suggests, be of brick at least 8 in. thick, or of reinforced concrete at least 6 in. thick; and double fireproof doors should be provided, one at each face of the wall. The inner door should be made to close automatically; the outer, self-closing, should be of a swinging type, and made to close into a jamb so as to prevent the passage of flame around the edges. A vent to the open air should be provided, giving a clear opening of at least half a square inch per cubic foot of room. Mr. Hobbs recommends a number of general precautions, the adoption of which would demand nothing but a little intelligent organization. At no time, he suggests, should waste negatives and film scraps be allowed to accumulate on tables or floors; they should immediately be placed in fireproof metal cans fitted with self-closing spring-hinged covers. Only standard electrical fixtures should be permitted in rooms where films are filed or handled; the use of portable lights on extension cords should be forbidden. In each room there should be a fire extinguisher, and the doors should be arranged so as to make egress easy. Film negatives should be filed as soon as possible in heavy manila envelopes, and should be arranged so that from time to time useless negatives may be weeded out. The diffusion glass of film illuminators should be cool to the touch, and there should be no unnecessary display of film negatives in lighted illuminators. Smoking should be forbidden in rooms where films are stored, and no films should be placed within two feet of steam pipes, radiators, or other sources of heat.

[1] Abstracted in the *Journal of the American Medical Association*, May 25th, p. 1763.

LA SIGNORA DALLA LAMPADA.

THE present vogue of unsentimentality, expressed in a growing tendency to represent ideas and personalities generally regarded as beautiful and inspiring as being humdrum, if not actually paltry, has led in America to the coining of a new verb—to debunk. To debunk is to remove the whitewash from historical characters, or, conversely, to prove that they are only as black as they have been painted. No illusions may hope to elude the vigilance of the modern debunker, except his own and those of his own age and place. His happy hunting ground is the nineteenth century, to whose complacency and self-righteousness he feels a superiority which, it is common knowledge, is neither complacent nor self-righteous. In America he has debunked George Washington; in England, the eminent Victorians. Mr. Lytton Strachey has applied the process to Florence Nightingale, damning her with supercilious praise and throwing into relief those of her characteristics which became less amiable as she grew older. The author of the play *The Lady with the Lamp*, probably influenced by Mr. Strachey, has also emphasized the harder, more masculine side of Florence Nightingale's character at the expense of its more lovable, more feminine aspects. The account by Dr. E. W. Goodall[1] of an interview with Florence Nightingale when she was 73 years old presents her in so different a light that one may suspect these authors of having been influenced too much by the fact that their subject belonged to the Victorian instead of to their own more enlightened age, of having avoided one extreme of bunk only to be guilty of another. We are pleased to turn from their writings to a most graceful tribute paid to her memory and to the British medical profession by Colonel Arturo Casarini, M.D. (one of the delegates to the recent congress in London), in a pamphlet dedicated by the *Italian Journal of Military Medicine* to our Royal Army Medical Corps. Dr. Casarini, in "La Signora dalla Lampada (Fiorenza Nightingale)," opens with a short but vivid sketch of the influence of Rome on Britain, giving some account of Roman remains in this country, and reproducing appropriately a photograph of the monumental stone now in the Newcastle Museum, erected on Hadrian's wall to a young army surgeon of the Tungrian Cohort. That the influence has not always operated in one direction only is suggested by Colonel Casarini's handsome tribute to our nation for its sympathy and help in the stormy days of the last century when Italy fought to overcome the oppression of her alien masters. Florence Nightingale, who reformed the methods of nursing the sick throughout the world, though bred in England, was born in Italy and named after her birthplace, Florence. For many years she prepared herself by all available means for what was to prove her great mission; she studied the theory and practised the art of nursing wherever and whenever she could, and she visited and studied the organization of hospitals and infirmaries both at home and abroad. In the Institute of Protestant Deaconesses at Kaiserswerth she remained for six months learning the principles and details of hospital management; in Paris she studied the organization of the hospitals under the charge of the Sisters of St. Vincent de Paul. When at last, in 1854, she was invited by Sidney Herbert, Secretary of State for War, to proceed to Scutari to reorganize the barrack hospital, there was no one more fitted to undertake the task than she. Colonel Casarini reminds us that the appeal on behalf of the sick and wounded at Scutari was made by Sir William Russell, the *Times* correspondent, who described the superiority of the French medical services and the value to the French army of the Nursing Sisters of St. Vincent de Paul. In response to his indignant demand that the women of England should go out and nurse their countrymen, Florence Nightingale wrote offering her services, in a letter which crossed one from Sidney Herbert inviting her to go at once to the Crimea. Appointed with full powers, she set out for Turkey on October 23rd, 1854, with thirty-eight nurses, including ten Sisters of St. Vincent de Paul. She reached Scutari on November 4th, in time to attend to the wounded of Balaklava and Inkerman. The story of her work at Scutari and elsewhere is one of the most inspiring in English history, and we thank Colonel Casarini for telling it so beautifully. He concludes his work with a tribute to the Italian and British soldiers who fought and fell side by side in the great war, and to Miss Hilda Wynne, who, on many fronts, including Piave and Pralungo, proved herself a worthy follower of Florence Nightingale.

[1] *British Medical Journal*, October 27th, 1928, p 765.

THE STUDY OF TISSUE CULTURES.

THE work at present carried out at the Strangeways Research Laboratory, Cambridge, had its origin in a theory developed many years ago by the late T. S. P. Strangeways, Huddersfield Lecturer in Special Pathology, University of Cambridge, that our knowledge of a disease could best be advanced by a study of its pathology in the living body. We are reminded in a recently issued report[1] on the work of the laboratory that Strangeways's first studies of the cytology of the living cell were in connexion with the problems of rheumatoid arthritis, it being for the investigation of the pathological processes involved in this condition that he elaborated his technique for the cultivation of cells *in vitro*. He soon realized, however, that this method of approach was likely to help in the elucidation of wider problems connected with normal and abnormal tissue growth, and, gradually emptying his hospital wards of arthritic patients, he gave himself over almost entirely to investigating the technique and applications of tissue culture. Since 1920, states the report, the work done in the laboratory has related to four main subjects—cytology, embryology, radiology, and cancer. Strangeways's own research, which produced many valuable and interesting observations on the division, structure, and behaviour of living cells, has been continued by his daughter, who has recently studied one of the cytological problems of wound healing—namely, the question as to whether the cells of newly formed connective tissue may be derived from wandering cells of the blood. Of interest in connexion with the origin of various types of cerebral tumours is an investigation by Drs. Wells and E. A. Carmichael, who are studying the cytological development of the central nervous system by cultivating embryonic brain *in vitro*. The technique of embryological investigation, initiated by Strangeways's discovery that tissues cultivated in a suitable medium continue to undergo progressive structural differentiation, has been elaborated and successfully applied to a study of the development of the isolated limb and eye rudiments of early fowl embryos. The results of these and other embryological studies have demonstrated that complex tissues are able to develop from completely isolated rudiments without the control of nerves or blood vessels. Dr. J. G. H. Frew, in studying the embryology of the blow-fly, devised a method for growing fragments of its larvae *in vitro*, obtaining thereby important information about certain physiological factors involved in the metamorphosis of the maggot into the adult fly. In 1920 Strangeways began to study the effect of irradiation on the tissue cultures—an investigation which is making it possible to discriminate between those effects which are due to the action of the rays upon the cells and those due to the reactions of the body as a whole. It is further rendering possible the precise analysis of the effects of rays upon cell division—a subject of increasing importance to medical science. Since Strangeways's death Dr. Spear and Dr. Canti have investigated the effects of radium on cell multiplication, their results having an important bearing on the treatment of cancer by radiological methods. Dr. Spear, in his studies on the effect on cell division of temporary exposure to low temperature, has obtained results which resemble those obtained by irradiation with radium. Work on tumour growth was begun in 1926, when a study of Jensen's rat sarcoma was made by Dr. Fell and Dr. Andrews. In continuation of this study Dr. Andrews has conducted a series of researches on the relationship of acidity and cell degeneration to tumour growths, and has carried out a great number of experiments on the physiological conditions stimulating the multiplication of normal and cancer cells. As many of our readers are aware, Dr. Canti, using tissue cultures prepared in the laboratory, has evolved a technique for making cinematograph films of growing tissues, and has photographed cells actually under the influence of radium. Unfortunately, many lines of research have to be neglected owing to lack of funds, and if the work now being carried on at the laboratory is to continue its income must be increased sufficiently to enable it to provide salaries for a small permanent staff. As reported in our news column, a course of instruction in the technique of tissue culture will be given at the laboratory from July 9th to August 10th. Only a limited number of applicants can be received, and those wishing to take the course should apply, not later than June 30th, to Dr. H. B. Fell, Strangeways Laboratory, Cambridge.

[1] The Strangeways Research Laboratory, formerly The Cambridge Research Hospital. Cambridge. 1929.

COTTON CLOTH FACTORIES REGULATIONS, 1929.

THE Cotton Cloth Factories Regulations, made by the Secretary of State under a new short Act known as the Factory and Workshop (Cotton Cloth Factories) Act, 1929, came into operation on May 15th, the regulations under the Act of 1911 being, of course, repealed. These new regulations materially alter the requirements hitherto governing the conduct of cotton cloth weaving sheds, and give effect to certain recommendations of a departmental committee, to which weavers and manufacturers had agreed to submit their opposite contentions respecting the effects of humidification and the necessity for its abolition. The committee had agreed with the employers that humidification, as practised under the old regulations, did not adversely affect the sickness rate of workers in "humid" sheds as compared with that of workers in "dry" sheds, but held that the weavers were right in contending that the practice has a tendency to produce fatigue and limitation of output, and could, without detriment to the process, be subjected to further restriction. Both sides are doubtless pleased to have scored to this extent, though the real gain apparently lies in the clearing away of obstructions to an agreed set of regulations. On comparing the regulations with the recommendations one is immediately struck with the failure to do away completely with the old subdivision of weaving sheds into "humid" and "dry." Good reasons were given for suggesting this change, and, the recommendation to empower the Chief Inspector of Factories to grant exemptions in approved cases having been adopted, it is surprising that the complete cut was not made. Most of the requirements apply to "any weaving shed," but the two classes are still recognized by including them in the definitions and using the distinctive terms in three of the regulations. It is also to be regretted that the Secretary of State has not adopted the sound and practical suggestion that plans of new sheds and of alteration to buildings should be submitted to the factory department for approval. The new Order does, however, carry out most of the recommendations, and should materially reduce the discomfort to the weaver without adversely affecting production. Artificial humidification must cease when the wet bulb temperature reaches 72.5° F., instead of at 75° as formerly, or when the scheduled relationship between the wet and dry bulb readings is exceeded; if average readings exceed 80° wet bulb, work must cease until this limit is regained; the minimum temperature permitted is 50° dry bulb for the first half-hour of the day, and 55° subsequently. The taking of readings does not now require a representative from both employers and weavers, and the records are to be sent to the inspector monthly instead of immediately. Top lights are to face between north-east and north-west; if the average of the readings of the hygrometers reaches 72.5° wet bulb, ventilation is to be continued during dinner hour, or for two hours after work finishes, as the case may be; cloak rooms are compulsory for humid sheds built after February 2nd, 1898, and for "dry" sheds built after January 1st, 1928; defects in the working of appliances

must be reported, and only individuals duly authorized may interfere with them or with hygrometers. It is pleasing to note that the carbon dioxide standard, though now said to be unscientific, is still regarded as of practical utility and is not to be scrapped; inasmuch as it has been the big lever in producing workable schemes for combining ventilation and humidification, it should still be effective in keeping these up to the mark. Regulations concerning steam pipes, boilers and flues, whitewashing, and hygrometers have not been altered.

BLOOD-VESSEL TUMOURS OF THE BRAIN.

ALTHOUGH vascular tumours of the brain are rare, their importance has aroused considerable interest, and Cushing and Bailey's useful monograph on the subject was reviewed at some length in our issue of May 25th (p. 958). In this connexion it may be mentioned that Mr. R. Foster Moore records a case of haemangioma of the meninges involving the visual cortex in the May issue of the *British Journal of Ophthalmology*. Mr. Foster Moore's patient was a boy, aged 12, who complained of defective vision of the left eye; there was a naevus of the left half of the face involving the eyelids. Examination of the fields of vision showed, however, that right homonymous hemianopia was present. He suggested that a naevus of the visual cortex was the likeliest cause of the condition, and that a skiagram should be taken with this in view. A large wedge-shaped tumour was revealed; it consisted of a new growth of large vessels, and was obviously a meningeal haemangioma: its base lay at the occipital pole immediately above the tentorium, and was, therefore, closely related to the visual cortex. Mr. Foster Moore draws attention to various other cases of the same kind that have been noted since 1922, when, in the *Journal of Neurology and Psychopathology*, Parkes Weber reported on a tumour recognized by *x*-ray examination of the living patient to be a calcified haemangioma. He mentions the frequent association of these tumours with such ocular abnormalities as buphthalmos and heterochromia iridis. In view of the frequency with which this first abnormality is found in cases of intracranial haemangioma, he advises that a skiagram of the skull should be obtained in all cases of buphthalmos, and also that a watch should be kept for the possible association of choroidal melanomata with intracranial tumours.

THE CARE OF EPILEPTICS.

IN the *Journal* of June 1st last (p. 1003) we gave an account of the provision for the care of epileptics made in several countries of Europe and the United States of America, and drew attention to the fact that there is an insufficiency of suitable provision in this country. The Permanent Committee on Epileptics, in response to whose inquiries much of this information was collected, has now issued to the officers of all county councils and county borough councils an appeal to consider the claims of epileptics when preparing administrative schemes under the Local Government Act, 1929. It is pointed out that there are numbers of epileptics in the general Poor Law institutions, and that this is not a satisfactory arrangement. Some of these epileptics are insane; a larger number are mentally defective; but a considerable proportion may be classed as mentally normal. These last often feel their position keenly, and really require separate institutional accommodation. The committee hopes, therefore, that, in addition to the use of their powers under the Mental Deficiency Acts and the Education Acts, councils will make such provision their special and early care. This circular letter to the county and county borough councils is an example of vigilant and appropriate action which may be commended to the notice of Divisions and Branches of the British Medical Association, and to others who are anxious for the best use of the opportunities afforded by the public health provisions of the new Act.

WE regret to announce the death of Sir William J. Thompson, M.D., Past-President of the Royal College of Physicians of Ireland, and for many years Registrar-General for Ireland.

THE L.C.C. AND TRANSFERRED HEALTH FUNCTIONS.

THREE PRINCIPAL MEDICAL OFFICERS.

THE London County Council, at its meeting on June 11th, decided, as from October next, to increase the fixed staff of its Public Health Department by three principal medical officers. This increase is the first result of the arrangements which have to be made consequent upon the transfer to the Council of Poor Law work under the Local Government Act, 1929. While such transfer does not take place until April next, it is felt that in view of the magnitude of the new duties to be undertaken and the necessity for ensuring that complete arrangements shall be made for the efficient organization and administration of the transferred functions as from the appointed day, adequate staffing arrangements should be made during the preliminary period. The officers in question, therefore, will be appointed before the Council rises at the end of July for the summer recess. The salary of each of the three officers will be an inclusive one of £2,000 a year, rising by annual increments of £100 to £2,500 a year. It should prove attractive to men with the highest qualifications for responsible work of this kind. Particulars of the new posts appear in our advertisement columns.

The Establishment Committee, in a report to the Council, estimates that the total staff of the 81 hospitals and infirmaries to be transferred to the Council from the Poor Law guardians and the Metropolitan Asylums Board numbers 16,000 persons, of whom no fewer than 400 are whole-time medical officers, and at least 7,500 are members of the nursing services. These figures do not take account of the expert technical staff engaged in consultative medical and surgical work and laboratory investigation, of which the total number engaged, whole-time and part-time, is upwards of 150. It is not possible at present to make any detailed statement as to the staff which will be required to assist the Council's medical officer of health (Dr. F. N. Kay Menzies) in carrying out the increased volume of work to be dealt with in his department, but it is considered necessary as a first step to appoint three principal medical officers of higher rank and salary than that of the present senior medical officers of the service. It will then be possible to reorganize the department on the basis of three divisions, thereby placing each of these principal officers in a highly responsible position, and providing for the necessary co-ordination of the existing and transferred health functions.

THE KING.

SINCE the publication of the note in our last issue (p. 1050), the following bulletin has been issued from Windsor Castle, dated June 10th: "His Majesty the King is making progress. The abscess is diminishing in size. The general health is good." During the week His Majesty has been well enough to receive outgoing Ministers and attend personally to business incidental to the appointment of the new Cabinet; he has also spent some hours out of doors in the grounds of the Castle. Our readers will have concluded from the earlier bulletin that a collection of pus had formed under the site of the old scar. This is now draining, and the abscess has nearly healed. *X*-ray examination shows the presence of one or two minute sequestra. There is a good prospect of the condition clearing up without further intervention.

CHEMICAL FACTORS IN THE CONTROL OF THE CIRCULATION.

CROONIAN LECTURES BY DR. H. H. DALE.

AT the Royal College of Physicians on June 4th, 6th, and 11th, DR. H. H. DALE, F.R.S., delivered the Croonian Lectures, his general subject being "Some chemical factors in the control of the circulation."

VASOMOTOR HORMONES.

In his first lecture he recalled that six years ago in the same assembly he delivered the Oliver-Sharpey Lectures, when his subject was the activity of the capillary blood vessels. His aim then was to bring together the evidence, much of it of recent date, on the independent contractile activity of those minute vessels and its bearing on certain problems of physiology and pathology. Some of the investigations were concerned with the vascular effects of certain intensely active principles, one of which, adrenaline, had long been known as a natural hormone. Two other bases, rivalling adrenaline in the intensity and evanescence of their activity on the tone of the small blood vessels, were also mentioned—namely, histamine and acetyl-choline—but there was then no evidence which seemed to justify the supposition that either of these substances was a natural constituent of the animal body.

During the last six years evidence from a number of sources had brought about a great change in the situation. Sir Thomas Lewis had published a systematic review of certain researches, the central interest of which from this point of view was the recurring evidence of liberation from injured or irritated cells of a chemical substance closely resembling histamine in its action and responsible for the vaso-dilatation and wheal formation in the immediate neighbourhood of the lesion. Meanwhile, the lecturer's own associates had been making progress, far beyond expectation, in the isolation, in pure form from extracts of animal tissues, of substances producing actions on peripheral blood vessels. From an entirely different direction evidence had appeared indicating that those changes in the automatic rhythm of the heart which were produced by stimulation of the vagus on the one hand, and of the sympathetic nerve supply on the other, were not the results of the direct passage of nerve impulses to the heart muscle, but were mediated by the liberation of chemical principles having inhibitory or excitatory actions.

Therefore it had seemed useful to attempt a review of the evidence concerning some of these chemical factors in the control of the circulation, passing under consideration, in the first place, the previously known substances which had claims to be regarded as circulatory hormones in the true sense—namely, adrenaline and the vaso-constrictor principle of the pituitary body. It was desirable to restrict the word "hormone" to its original meaning—namely, an active principle formed in one organ and carried by the blood to others in which it produced its specific pulsating or pharmacodynamic effect. In this sense adrenaline might be taken as a perfect type of the hormones, and the pituitary vaso-constrictor principle, which might be referred to as "vasopressin," had at least a presumptive claim to be included in the list.

Adrenaline.

The knowledge regarding adrenaline was more complete than in the case of any other hormone. It was a relatively simple derivative of catechol, and was successfully produced by synthesis many years ago. Its action, when applied through the circulation, was a very evanescent one, unless it was injected in quantities altogether beyond the physiological range. Accordingly it was admirably fitted for the temporary reinforcement, in response to sudden emergency, of the effects of true sympathetic nerves on almost all organs supplied by them. The output of adrenaline from the suprarenal medulla was under nervous control, responding to impulses in the splanchnic nerve fibres running to the gland. The consequent gush of adrenaline into the venous blood accompanying a sudden emotion, and the adaptation of its effects, especially on the circulation, to the physiological needs of the emergency, had already been emphasized. It must be supposed that adrenaline was carried in almost equal concentration to all parts of the circulatory mechanism, reproducing the sympathetic effects on the heart-beat, and affecting the blood vessels in the sense of their response to sympathetic impulses. The variations of this response in intensity and even in direction produced large variations in the relations between the vascular tone in different systems. The vessels of the gastro-intestinal canal were apparently in all animals more sensitive to the vaso-constrictor effect than those of the skeletal muscles, so that a dose of adrenaline entering the general circulation would tend to produce a redistribution of the blood supply in favour of the muscles and at the expense of the alimentary canal. Discussing the effect as seen typically in the cat and dog, he suggested that the acceleration of the output of adrenaline from the suprarenal medulla might be regarded as an item in a general series of changes replacing the physiological conditions favourable to contemplative digestion by those which fitted the animal for combat or flight.

Vasopressin.

The pituitary vasomotor principle presented in many respects a contrast to adrenaline. Opinion had been sharply divided as to whether one or several active principles were responsible for the effects produced by extracts of the pituitary posterior lobe. During the past year the matter had been settled by Kamm and a team of workers, who had obtained a powerful vaso-constrictor fraction, which they termed "vasopressin," which had but slight action on the uterus. Another fraction which they termed "oxytocin" was powerfully stimulating for the uterine muscles but almost inactive on the blood vessels. The actions of the whole extract on the plain muscle of the uterus and on the vascular tone were, therefore, certainly due to different principles.

Of the chemistry of vasopressin little was known. It was not a simple base, like adrenaline or histamine. Injected into the circulation, it was not, like adrenaline, rapidly destroyed. Its action was long and persistent. For its true hormone function and the manner in which it came into action, the evidence was remarkably incomplete and indirect. It was difficult to believe that a substance so potently active on artificial injection should be concentrated in a structure without other known function, with no provision for its carriage by the blood to the tissue in which its intense activity became effective.

So far as its action had yet been analysed, vasopressin appeared to produce its effects on the circulation by increasing the tone of the minute vessels without any discrimination corresponding to their nerve supply. The strongest evidence in favour of the function of vasopressin as a true hormone was its occurrence in such quantity in a tissue in which no local function could be imagined for it. It might be that the function of the pituitary hormone was to provide yet another safeguard against circulatory collapse by a general and undiscriminating maintenance of tone in the small blood vessels when sympathetic impulses and adrenaline alike began to fail under the stress of prolonged and excessive demand.

Control of Vascular Tone.

Looking at the function of the nerve centres controlling vascular tone, it was almost a commonplace to say that, like that of many hormones which had a general distribution through the blood, the control was predominantly tonic and vaso-constrictor. This control, whether by the nerve centres or the true hormones, might be regarded as adapted to the maintenance of the average vascular tone needed for an efficient circulation, to its adjustment in relation to the pressure created in the large arteries by the heart's activity, and to mass variations in the distribution of the blood supply as between one system and another or as between one organ and the rest of the body.

A large proportion of the vascular reactions of the body, however, were of quite different type, and fitted to effect

a much finer adjustment of the blood supply to more closely localized requirements. Into this class came all the reactions most accessible to observation in the skin and superficial mucous membrane, but they occurred in almost all organs in which a localized stimulus, irritation, or injury caused a local vaso-dilator reaction. According to Lewis, the immediate stimulus to these local vascular reactions was a chemical one. Some substance was liberated from the injured cells which directly dilated the minute vessels and rendered their walls abnormally permeable. Lewis had no direct evidence as to the nature of this chemical agent, but among known pure substances he found one—the base histamine—which reproduced the complex with detailed fidelity when introduced in minute dosage into the epidermis. The lecturer regarded it as highly probable that the substance recognized by Lewis was either histamine itself or some loose combination owing its action to histamine.

Local Vaso-dilator Reactions.

In his second lecture Dr. Dale devoted himself to the physiological significance of histamine, which, he said, was first made synthetically, as a chemical curiosity, by Windaus and Vogt. The first hint of its physiological interest was obtained when Barger and the lecturer were seeking for the principle in certain ergot extracts, which they had recognized by its potent stimulating property on the muscle of the isolated uterus, associated apparently with a pronounced depressor action, when administered intravenously to a cat. This substance was identified from ergot as the base now known as histamine. When Laidlaw and he came to investigate its action in detail, the remarkable resemblance between its effects in different species and those which, in the same species, had then recently been described as characteristic anaphylactic shock, soon became clear. It became clear also that in each species the corresponding physiological complex was produced by various organic extracts and products of protein digestion, in which the presence of unknown "depressor principles" had long been recognized.

The first definite claim to the chemical identification of histamine as the essential depressor constituent of a number of animal organs and tissues was made by Abel and Kubota in 1919. Their evidence, unfortunately, failed to carry complete conviction. They isolated histamine salts from two of the many tissues investigated, but their findings in both cases were open to criticism. Their conclusions, as more recent work had shown, were substantially correct, but the evidence left those conclusions open to doubt, and they met with no general acceptance.

Histamine as a Normal Constituent of Tissues.

About 1926 interest arose in claims made for injection of extracts prepared from the liver as a specific treatment of morbidly high blood pressure. The particular problem here was to discover the chemical nature of the substance producing the immediate depressor action, which was being used in the laboratory as an index of the value of the extract. Two different factors were easily recognized in the vaso-dilator activity of this extract: one of them an action resembling that of choline, affecting the stronger arterioles, and the other an action resembling that of histamine, confined to the minute vessels and capillaries, but exhibiting chemical properties quite unlike those of histamine itself. At several stages he and other workers had almost concluded that it could not be histamine, and were only saved from this error by observing that when histamine was added to the extract its chemical behaviour showed similar anomalies. Eventually both choline and histamine were isolated, being obtained not merely in sufficient quantities for complete chemical identification, but in such amounts as to make it unnecessary to suppose that any other more complex or unidentified principles contributed to the depressor vaso-dilator action. Attention was next turned to the lung, which yielded an extract having a peculiarly intense depressor action. Here almost all the activity was found to be of a histamine type, and there was comparatively little difficulty in isolating the histamine.

Dr. Dale then showed a table giving the figures obtained in a survey of a number of organs, the extracts being assayed for histamine by the physiological method. He drew attention to the relatively enormous histamine content of the lung and the low position of the skeletal muscle in the scale. It had been possible to test whether histamine thus extracted from a tissue such as the lung was present during life or formed rapidly after the death of the cells. The experiments showed that histamine had evidently as good a claim to be regarded as a normal constitutent of the living cell as any other substance which similarly conservative methods could extract. It must either be existing during life or be formed in the very act of cellular death.

Lewis's H- Substance.

All this work had an important bearing on the conclusions which Lewis and his colleagues were reaching independently. Lewis had evidence that the living cells of the skin, when subjected to irritation or injury, liberated a substance with an action remarkably like that of histamine. The suggestion was that this substance—Lewis's H- substance—was histamine itself, not newly formed in response to the stimulus, but already existing in the cell interior and only becoming active on liberation. Chemically identifiable histamine had not yet been obtained from the skin, but Harris, in Lewis's laboratory, had no difficulty in proving that the skin of man and other mammals, extracted by processes similar to those used for other tissues, yielded a substance physiologically indistinguishable from histamine.

So far all seemed to be in favour of the identification of the substance released from living cells in response to injury as histamine. Lewis, however, while acknowledging the many points in favour of such identification, preferred to refer to the substance liberated during life as the H-substance—a name designed to leave the question of identity open. A complete proof of the identity could only be obtained if the H- substance could be trapped in oedema fluid or in blood or lymph. The H- substance, by common consent, was normally present inside the cells of the tissue. When attempts were made to extract it, histamine was invariably obtained. If H- substance was not histamine, therefore, it was a substance immediately yielding histamine.

Difficulties of Identification.

Dr. Dale proceeded to discuss some of the difficulties in the identification of the H- substance with histamine. His general conclusion was that while some of the phenomena connected with the H- substance were not easy to reconcile immediately with the supposition that it was free histamine, there were others which would be equally difficult to explain if it were supposed to be a much more complex and indiffusible body. If these difficulties only were in question it would seem rational and entirely compatible with what was known of its properties to suppose that histamine was the active constituent of the H- substance, and that the latter, according to the varying conditions of its liberation, might represent all grades of molecular association, from free histamine to relatively large complexes. The term H-substance would then no longer represent a hypothetical chemical entity, which might be histamine or something entirely different; it would represent a group of loose molecular combinations, of varying complexity, in which histamine might be liberated from cells during life, and to all of which it might impart its characteristic physiological actions. More serious difficulties arose, however, if the attempt was made to apply such a conception to all vertebrate animals. In the case of the frog, for example, the lack of vaso-dilator action by histamine, which Laidlaw and the lecturer had indicated, constituted a genuine and complete discrepancy.

Viewed as a whole, the evidence seemed to indicate that histamine, in the mammals chiefly investigated, was a generally distributed constituent of the cells of the animal body, inert while it remained within the cell, but intensely active in producing local vaso-dilator reactions when appropriate stimuli released it from the cell into the tissue fluid, either free or in molecular combinations of varying complexity. In certain vertebrate types, such as the frog, some other basic substance, possibly allied to it, appeared to replace histamine in distribution and function

Physiological Significance of Histamine in the Lung.

In discussing some of the physiological questions which arose out of this, the lecturer referred especially to the presence of histamine in so large a quantity in the lung. The fact that in the lungs alone there might be as much of this intensely active substance as there was of adrenaline in the suprarenal gland of the same animal, and that this organ, with its small intrinsic metabolism, had no obvious need for local variation of the diameter of its small vessels, naturally raised the question of an internal secretion of histamine from the lung, and the consequent function of histamine as a true hormone. There was no evidence of such a process, and it could only be recognized as a mere possibility. The alternative possibility, quite unsupported by any direct or adequate evidence, was that histamine, thus accumulated in the lung, might represent material which, having served its function elsewhere in more active tissues and escaped into the venous blood, had been caught on its way through the lung vessels and held there pending destruction by some method. The physiological significance of histamine in the lung was a problem deserving further investigation.

Looking at all the evidence for the normal physiological functions of histamine in various organs, the lecturer thought it might be concluded that histamine was practically limited to actions in the immediate neighbourhood of its liberation. On several occasions he had suggested that the liberation from the active cell of a substance acting like histamine on the minute vessels in its immediate neighbourhood should provide a perfect mechanism for the fine adjustment of the blood flow to the fluctuating needs of small tissue units; but there was still no more than this teleological argument in favour of such a process.

VASO-DILATOR SUBSTANCES: FURTHER CONSIDERATIONS.

In his third and concluding lecture Dr. Dale addressed himself further to the consideration of histamine, and entered upon a long and detailed argument concerning its significance in connexion with anaphylactic and allergic reactions.

Anaphylaxis and Histamine Action.

At the time when the activity of histamine was discovered, the rediscovery of experimental anaphylaxis in the guinea-pig, and the dramatically fatal character of the shock in that species, aroused fresh interest in the physiological details of the reaction as seen in different animal types. It seemed natural to suppose that the anaphylactic shock following the injection of Witte's peptone into the dog or guinea-pig was due to the liberation of a protein cleavage-product in the circulation by digestion of the reinjected antigen, and when the action of so simple a substance as histamine was found to produce the principal features of the shock, with their characteristic contrasts in the different species, it was again natural that it should be identified with this hypothetical circulating anaphylatoxin. This theory, however, had never appealed to the lecturer, and later his own investigations, together with those of a number of observers, convinced him of the correctness of the view which attributed the symptoms of the anaphylactic reaction, not to the formation of a poison in the blood, but to the reaction between the antigen and a precipitating antibody located in the cell protoplasm. The knowledge now available seemed to make the matter clear. Lewis, finding that a local anaphylactic reaction in the human skin presented the familiar "triple response" of the blood vessels to a local injury, concluded that the union of antigen and antibody in the sensitized cells acted, like any other injurious stimulus, by releasing his pre-formed H- substance. Such a conception appeared to the lecturer to fit all the known facts, and to make clear the meaning of many which were difficult to interpret on any other theory. It was difficult, with the earlier conceptions, to explain why, in each species, only those cells apparently should become sensitive to the foreign antigen, and react to its reinjection, which had normally a special sensitiveness to histamine. There was now no necessity for assuming such preferential sensitization of the cells which participated in the overt reaction. Cells of other types might be assumed to contain the specific antibody and, as the result of its union in their protoplasm with the foreign antigen, to liberate pre-formed histamine; but only those cells which, in each species, were sensitive to histamine would exhibit the physiological reaction thereto. The effect thus produced could arise in one of two ways: either the histamine might be liberated from the reacting cells, or anaphylactic injury of the cells of some large organ, such as the liver, might liberate histamine into the general circulation in such quantity as to produce its effects in the body generally, and thereby cause a histamine response in cells not themselves sensitized to the antigen. Dr. Dale proceeded to trace these alternative processes as the central features in the shock as seen in the guinea-pig in the one case and in the dog in the other.

Acetyl-choline.

After some further remarks on allergic reactions and anaphylactoid phenomena, Dr. Dale turned to the action of an entirely different type of vaso-dilator substance which resembled histamine in certain features of its scientific history. Like histamine, the simple quaternary ammonium base known as choline was made in the chemical laboratory long before it acquired a physiological interest. His own interest in it was first aroused, again as in the case of histamine, by the discovery of its presence in certain extracts of ergot. On making a more systematic investigation of its actions on various organs he was struck by the remarkable parallelism between its effects and those produced by stimulation of parasympathetic nerves. It showed an extraordinary instability when injected into the blood stream, presumably being hydrolysed with the liberation of the relatively inactive choline. Accordingly, its parasympathetic effects were even more rapidly evanescent, as well as more powerful, than the sympathetic effects of adrenaline produced under like conditions. During more recent years he had observed that, apart from its parasympathetic and vaso-dilator effects in minute doses, readily annulled by atropine, acetyl-choline exhibited, when injected in larger doses after atropine, a powerful nicotine-like action on ganglion cells, and also the peculiar motor effects on voluntary muscle which nicotine was already known to produce.

Isolation of Acetyl-choline from Spleen Extracts.

Dr. Dale went on to describe the work of Loewi and others on the frog's heart as affording evidence of the peripheral release, during vagus stimulation, of a chemical substance transmitting the characteristic effects of vagus impulses, and suggesting the properties of acetyl-choline; and then he told of some recent work of his own and his colleagues on spleen extracts, using the spleens from freshly killed oxen and horses, in which a surprisingly powerful action of the choline type had been found. Here was an intensely active and unstable choline ester, naturally present in an animal organ, and in such proportion that the attempt to isolate it was a reasonable enterprise. Such isolation had just been completed by his colleague Dr. Dudley and himself, and they were now able for the first time to state that the substance was indeed acetyl-choline. It was not to be supposed that the finding of acetyl-choline in the spleens of certain animals had necessarily any significance as regards the spleen itself or suggested a true hormonic action of the substance. The identification was important chiefly for the reason that acetyl-choline, which first came to notice as an artificial substance, and had hitherto been known only as such, or as a product of plant metabolism, was now known to be actually a natural constituent of the animal body. Dr. Dale entered upon a discussion of certain hitherto disconnected physiological phenomena which reinforced the strong probability that here one was dealing with acetyl-choline itself, and not with some unknown substance having similar properties.

Effects of Organic Extracts.

In summing up the whole subject, the lecturer said that he had endeavoured to describe the part played in the control of circulation by four chemical agents which seemed to him to be the only ones sufficiently definitely known to warrant even provisional conclusions as regards their normal

functional significance. Evidence existed as to the effects of extracts from various organs of the body, artificially injected, or applied to isolated preparations of cardiac or involuntary muscle; but a great many of these observations could only as yet be put on record for future interpretation. There was evidence, for example, as to the effect of extracts from the right auricle or sino-auricular junction on isolated heart muscle. It had been suggested that some of the stimulating or restorative effect of such extracts on the rhythm of the muscle might be due to the presence of histamine. There was not yet sufficient evidence to justify the assumption that such an extract contained a "heart hormone." What was really needed was a system of criteria or postulates (comparable to Koch's celebrated postulates dealing with the etiological significance of a micro-organism), representing conditions which must be fulfilled before physiological significance was attributed to the effects produced by the artificial application of an organ extract. There was no hope, however, that any such criteria as could at present be suggested would be more generally applicable, or less liable to exception, than Koch's postulates had proved to be in their own sphere.

Scotland.

The General Election: Scottish Universities.

THE result of the election of three members of Parliament for the combined Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh was declared on June 10th as follows:

*John Buchan (C.)	9,959
*Sir George Berry, F.R.C.S.Ed. (C.) ...	9,262
*D. M. Cowan (L.)	6,698
Dr. James Kerr (Lab.)	2,867

An asterisk denotes that the candidate sat in the last Parliament. Sir George Andreas Berry has been one of the members for the Scottish Universities since 1922. He is Extra Surgeon-Oculist to the King in Scotland and a Past-President of the Royal College of Surgeons of Edinburgh.

Public Health in the County of Aberdeen.

In the fourth annual report, for the year ended December 31st, 1928,[1] Dr. H. J. Rae, medical officer of health to the county of Aberdeen, states that the statistics for 1928 were, on the whole, satisfactory. The number of deaths in the eight districts was 1,415, which corresponds to a death rate of 13.4 per 1,000 of estimated population, the same rate as prevailed in 1927. Compared with 1927 there was a decrease of 48 deaths from influenza and 30 from cancer, but there were 48 more deaths from circulatory diseases and 19 more from tuberculosis. There was a decrease in the incidence of scarlet fever—577 cases as against 603 in 1927—and a slight increase in the incidence of diphtheria, 109 cases being notified as against 93 in the previous year. Schick and Dick testing and re-testing, with subsequent immunization of those found to be positive, continued to be used as a preventive measure, but failing the employment of a special medical staff this work in the rural areas was of necessity sporadic in character. Dr. Rae found that while in scarlet fever active immunization might prevent the occurrence of return cases, the same could not be said of diphtheria. The fact that immunity conferred by injections of toxoid-antitoxin took from six weeks to six months to develop made this device useless in the prevention of return cases. The most alarming outbreak of infectious disease was a sharp, but fortunately limited, epidemic of infantile paralysis, which occurred chiefly in the Fyvie district; in all, thirteen persons were attacked by this disease, and one died. During the last three years there had been a considerable increase in the provision of new houses; in 1928 the number of new houses completed at December 31st was 149, and 70 were in course of erection; in 1927 the corresponding figures were 111 and 107. The maternity and child welfare scheme continued to expand, and it was satisfactory to report a decline in the notifications of ophthalmia neonatorum. The total number of births registered in the area was 2,629, as compared with 2,559 in 1927. The rate of infantile mortality was 63.5, as compared with 73.5 in 1927 and 75.5 in 1926; the Scottish rate for 1928 was 86, and in 1927 it was 89. The maternal mortality rate, however, was higher than usual, the case mortality being 47.8 per cent., as against 6.5 per cent. in 1927. The school medical officers had to deal with 26,000 children, and it was an alarming fact that about a quarter of the beginners required medical attention. The majority of defects had thus manifested themselves in the pre-school period, and were due partly to hereditary degenerative processes, and partly to malnutrition and after-effects of infectious diseases, such as measles, whooping-cough, and tuberculosis. Many children entering school were already suffering from late rickets, general debility, diseases of the ear, nose, and throat, mouth breathing, and decay of the temporary teeth. The sick child, in Dr. Rae's view, should not be looked on as an independent unit, but as one of a family, the work of the school medical officer and the child welfare medical officer merging into one. To safeguard the health of the child it would be necessary to extend the Insurance Acts to cover the dependants of insured persons, and to include the general practitioner in a comprehensive scheme for the prevention of disease. The dental treatment of school children was gaining so much in popularity that it was difficult for the dentists to visit all the schools during each year. Increasing attention was also being given to the treatment of eye defects, but there were a few parents who refused to allow their children to follow the oculist's advice. During the year under review the number of cases of phthisis notified—namely, 149—was the lowest yet recorded, though a greater number of non-pulmonary notifications (153) had been made than in any previous year with the exception of 1924. The death rate from all forms of tuberculosis was 97.07 per 100,000, and from pulmonary tuberculosis alone 71.2 per 100,000. The Scottish tuberculosis death rates were 97 per 100,000 from all forms of tuberculosis, and 68 per 100,000 from tuberculosis of the lungs—the lowest Scottish tuberculosis death rates yet recorded. Dr. Rae does not anticipate that the Local Government (Scotland) Act, 1929, will entail much alteration in the organization of the health services, but suggests that future hospital policy will have to provide a concentration of hospital accommodation for persons suffering from infectious diseases throughout the county. Presumably the Public Health Committee to be constituted under the Act would deal centrally with all public health matters, leaving, however, scavenging, water supply, and drainage in the hands of local committees.

[1] Fourth Annual Report by the Medical Officer of Health on the Health and Sanitary Conditions of the County of Aberdeen for the year 1928. Aberdeen: G. Cornwall and Sons. 1929.

Visit of American Doctors to Edinburgh.

Some sixty members of the Inter-State Post-Graduate Assembly of North America visited Edinburgh on June 3rd and 4th, spending the forenoons of both days in the Royal Infirmary. A clinical programme had been arranged by Mr. W. A. Cochrane and Dr. Stanley Davidson. On June 3rd Dr. Woodburn Morison conducted the party round the new radiological department, and gave a demonstration. Thereafter the members split up into sections. A medical clinic was given by Professor W. T. Ritchie, and a lecture-demonstration on irradiated milk, its preparation and uses, by Dr. Chalmers Watson. Mr. Henry Wade carried out operations for renal tuberculosis, renal calculus, and enlarged prostate. Professor John Fraser performed two gastrectomies, excision of the breast, and Spössel's operation for spastic paralysis. Professor D. P. D. Wilkie operated on cases of duodenal ulcer and carcinoma of the rectum. Those interested in gynaecology were catered for by Professor R. W. Johnstone, and laryngologists attended Dr. J. S. Fraser's clinic. On June 4th Mr. David Lees spoke of the treatment of neuro-syphilis, Professor Edwin Bramwell gave a medical clinic, Mr. J. M. Graham lectured on perforations of the alimentary tract, and Mr. J. J. M. Shaw demonstrated cases. In addition, Mr. W. Mercer did a bone graft and an operation for ulnar paralysis, while Mr. W. A. Cochrane showed a series of patients who had been operated on for simple fractures, and also performed

an operation for severe flexion contracture of the hip following poliomyelitis. The afternoons were spent in excursions.

New Students' Hall of Residence in Edinburgh.

There has hitherto been little development of residential halls for students in Edinburgh, although many years ago Professor Patrick Geddes and the Town and Gown Association instituted University Hall on self-governing lines, and its three houses—Ramsay Lodge, St. Giles's House, and Blackie House—have continued to flourish. Recently Mr. Thomas Cowan, LL.D., retired shipowner, gave a sum of £55,000 for a new residential hall for men students. His first gift of £15,000 was made in recognition of the excellent work of the students in the general strike. Some houses on the south side of George Square have been reconstructed and extended for the purpose, and now Cowan House is nearing completion, and will be ready for occupation at the beginning of the winter session. Mr. R. D. Maclennan, M.A., lecturer in philosophy, has been appointed warden. The present accommodation consists of 100 study-bedrooms, of which 28 can be shared by two students, along with dining room, common room, library, and tennis courts. The charge is from £18 to £23 per term of ten weeks. Permission to remain in residence during vacations may be given by the warden. Applicants must give two references, and preference will be given to applicants of Scottish, English, Welsh, or Irish descent. A few members of the teaching staff may be admitted. The University Court is the ultimate authority in all matters relating to the residence, but provision is made for a house committee consisting of the warden and five of the residents.

New Mental Institution for Govan.

Caldwell House Institution for Mental Defectives, which has been provided by the Govan District Board of Control in order to fulfil the terms of the Mental Deficiency Act, was formally opened on June 6th. The purchase of the Caldwell estate, which extends to 280 acres, the reconstruction of the mansion house and outbuildings, and the erection of a water tank of 100,000 gallons capacity, have involved an expenditure of £40,000. At the present moment there is accommodation for 70 female and 25 male defectives, but further extensions in the shape of pavilion dormitories and special nurses' quarters will be necessary. Mr. W. G. Sharp, chairman of the Caldwell Committee, performed the opening ceremony, and referred to the seriousness of the problem of mental deficiency. In Govan parish there were approximately six hundred certified or certifiable cases, but, in his opinion, if there was a closer investigation on the lines of the Commission for England and Wales it would not be surprising if the numbers were doubled. Dr. Hamilton Marr, one of the Commissioners of the General Board of Control for Scotland, said that all defectives were capable of being educated and being made useful to themselves and probably to the community. The central point of such an institution was its school. On the other hand, the central point of an asylum was its hospital. Other speakers were Mr. John Nelis, chairman of the District Board of Control; Dr. A. S. M. Macgregor, medical officer of health for Glasgow; and Dr. H. S. Edington, president of the Royal Faculty of Physicians and Surgeons of Glasgow.

Selkirk Hospital Association.

At the second annual meeting of subscribers to the Selkirk Hospital Association, Provost Ballantyne, who presided, stated that the association was now in a satisfactory position. They had a good going concern in Viewfield Nursing Home, a regular income fairly well assured, and a fine freehold building practically paid for. The number of patients treated during the year showed how great was the need for such an institution in Selkirk and district. The endowment fund now amounted to £7,396. The total ordinary revenue had been £1,500, and the expenditure £954. It had been decided to have fixed charges, of 3s. per day for contributors and 4s. per day for non-contributors. There were some cases, however, which would have to be admitted without paying these charges, but this matter would be in the hands of the committee.

Ireland.

Post-graduate Course at Trinity College, Dublin.

THE programme for the post-graduate classes which are held in the autumn of each year in connexion with the Medical School of Trinity College, Dublin, has now been issued. This year a comprehensive course starts on September 16th and ends on October 5th. Post-graduate instruction is given in medicine, surgery, midwifery and gynaecology, diseases of the eye, diseases of the throat, nose, and ear, diseases of the skin, orthopaedic surgery, genito-urinary diseases, pathology and bacteriology, biochemistry as applied to medicine, anatomy, therapeutics, radiology and the uses of radium, and electro-cardiography. Arrangements have been made whereby some of those attending the classes can reside within the College; women can be accommodated in Trinity Hall. Further information concerning these classes can be obtained from the Secretary of the Post-graduate Classes, School of Physic, Trinity College, Dublin.

Births and Deaths in the Irish Free State.

The births, 13,870 in number, registered in the Saorstat during the quarter ended December 31st last were equivalent to an annual rate of 18.8 per 1,000 of the estimated population, which rate is 0.1 below the average for the fourth quarter of the preceding ten years and 0.2 below that of the fourth quarter of 1927. There were 9,508 deaths, equivalent to an annual rate of 13.0, which is 1.5 below the average for the fourth quarter of the preceding decennium and 0.3 below the rate for the fourth quarter of 1927. Of the deaths, 958 (10 per cent.) were those of infants under 1 year, and 4,385 (45.7 per cent.) of persons aged 65 and upwards. The number of deaths of infants was equivalent to 69 per 1,000 births registered, as compared with 82, 61, and 56 for the preceding quarters. The 3,556 marriages registered during the third quarter of 1928 were equivalent to an annual rate of 4.8 per 1,000, the rate being 0.1 above that for the corresponding period of 1927, and 0.2 below the average for the third quarter of the preceding ten years. Of the total number of marriages, 3,249 were those of Catholics. The marriage rate among Catholics is 0.2 below, and that relating to other denominations 0.1 above the average for the third quarter of the ten years 1918–27. In Northern Ireland, for the last quarter of 1928, the births registered were equal to an annual rate of 19.1 per 1,000, in England and Wales to 15.7, and in Scotland to 19.0. In the same period the deaths registered in Northern Ireland were equal to an annual rate of 14.4, in England and Wales to 11.7, and in Scotland to 12.9.

School Inspection in County Derry.

The report of Dr. M. Matson, school medical officer to the Derry and Limavady Education Committee, for the year 1928–29, stated that 74 per cent. of the children on the rolls presented themselves for general inspection. By far the most common defect was decayed teeth, from which 36 per cent. suffered more or less; 26 per cent. suffered from enlarged tonsils and adenoids, and 9 per cent. from defective vision. Defective speech was more common than defective hearing. There were no cases of definite pulmonary tuberculosis, but a few suspicious cases were referred to their own doctor for observation. Many children were anaemic; 316 were verminous. The school nurse visited 582 children at their homes, and paid 297 revisits to schools; subsequent to the medical inspection she noticed a great diminution in the verminous cases. The majority of the anaemic cases had improved. Many children were wearing and deriving great benefit from the free spectacles; 20 had their tonsils and adenoids removed. Very few of the school buildings were altogether suitable or in good order. Most of the voluntary schools required repairs and new equipment. Seven schools were somewhat overcrowded; two had no playground; in ten the ventilation and lighting were inadequate; four were insufficiently heated; six had either insufficient or no cloakroom accommodation. One

school had no water supply, while at fourteen others the water had to be carried from an inconvenient distance. Two schools had no closets, and at sixteen others the closets were unsuitable in type or in extremely bad repair. The interiors of many of the voluntary schools were depressing.

England and Wales.

Prevention of Mule-Spinner's Cancer.

INVESTIGATIONS carried out under the auspices of the Manchester Committee on Cancer on the part played in the production of cancer by the lubricating oils used in cotton mills have confirmed previous findings on the carcinogenetic power of various oils, and yielded valuable information on the concentration in them of the cancer-producing principle. The committee, in its annual report for the year 1928, states that search for the actual cancer-producing substance is proceeding satisfactorily, having been so concentrated in a pure artificially made tar that a 5 per cent. solution of this substance has been shown to be more powerful than shale oil, the most dangerous of all commercially used oils; furthermore, two pure compounds of known chemical constitution have been proved capable of producing tumours. Investigations are being conducted to determine the factors which change a non-carcinogenic into an active carcinogenic substance. No carcinogenicity has been demonstrated in bitumen; pitch, on the other hand, has proved to be very active as a cancer-producing agent. Important investigations have been undertaken with a view to destroying the cancer-producing power of certain oils, so as to render them safe for industrial use. Partial success has attended some of the methods which have been employed, one particularly having resulted in the production of a purified oil which, when subjected to vigorous tests, failed altogether to produce cancerous growths. Representatives of the cotton industry who have compared this oil with the crude untreated oil have reported that its lubricating power is unimpaired. The committee is therefore able to hold out the hope that before long it will be possible to put on the market an oil which fulfils the needs of industry, above all, cotton spinning, and is yet quite safe to the workers. Before taking such definite action, however, it desires to be sure of its results, and believes that considerable confirmatory work will have to be carried out. Meanwhile the committee recommends the use of lubricating oils which contain no shale oil.

The Home Ambulance Service.

The responsibility of the police in regard to the removal of persons found injured on the roads is stressed by the Joint Council of the Order of St. John and the British Red Cross Society in its report for the quarter ended March 31st. The Home Office returns have once more drawn attention to the increasing number of road accidents, 156,024 persons having thus been killed or injured in 1928, or over 12 per cent. more than the number in 1927. The police, suggests the council, may meet their responsibility by initiating their own ambulance service, or by making use of the vehicles of local authorities or of those belonging to the Order and Society. Already many, if not all, of the home service ambulances work in close association with the police. So long, however, as there is an existing service which can be relied on to meet calls at any time of the day or night a separate police ambulance service, especially in country districts, would seldom be economical or advantageous to the public. The council suggests, further, that county representatives and those in charge of ambulance stations should, in view of the ever-increasing scope of their work, consider the question of making a satisfactory arrangement with the police authorities in their own areas. The police, it points out, are empowered to bear certain expense in regard to this work, and would probably be fully alive to the advantage of supporting by a small subsidy or the payment of a small fee an existing service already available day and night. The Order of St. John is engaged in preparing specifications for first-aid huts which can suitably be erected and equipped by the roadside at a reasonable cost. Several huts of various patterns have already been erected about the country, and have proved of real service in treating road accidents. There can be no doubt that an extension of this work will help to minimize the consequences of injuries. The council is able to report that during the quarter no fewer than 19,109 patients were carried in the home service ambulances, and 9,742 in the affiliated ambulances, bringing the total number of cases carried to March 31st up to 762,339.

Remuneration of Coroners.

The London County Council is proposing to increase the remuneration of coroners in view of the additional duties devolving upon these officers in consequence of the Act of 1926. It is pointed out that coroners are empowered by that Act to order post-mortem examinations to be made in cases in which no inquest is held, and as a result they now decide, on their own responsibility, large numbers of cases in which, under the old procedure, inquests would have been held. During the first eight months in which the Act was in operation, 1,573 such cases were dealt with by London coroners. Further responsibilities are imposed upon them in connexion with the holding of inquests without a jury, and in connexion with disagreements by juries as to their verdicts. Coroners of the County of London are required to have both legal and medical qualifications, and it is considered that the increase in the responsibilities attaching to the position warrants an increase in allowances of £100 a year with effect as from January 1st last. The result will be to raise the total remuneration paid to the seven coroners by the Council from £9,715 to £10,415 a year.

Correspondence.

THE DEFINITION OF RHEUMATOID ARTHRITIS.

SIR,—The article by Dr. A. H. Douthwaite on some aspects of the treatment of rheumatoid arthritis (June 8th, p. 1035) raises a very important question with reference to the nomenclature of this condition. The writer of the article describes very clearly three types of cases, loosely termed "chronic rheumatism"—namely, (1) rheumatoid or atrophic arthritis, (2) infective arthritis, (3) osteo-arthritis or hypertrophic arthritis—and one would conclude that these types are included under the common designation "rheumatoid arthritis." According to this view, which is shared by many other authorities, rheumatoid arthritis is a group denomination; as a rule, however, the last-named condition—osteo-arthritis—is relegated to a category by itself.

While agreeing wholeheartedly with Dr. Douthwaite in recognizing three distinct types of so-called chronic rheumatism, I cannot help thinking that a great deal of the confusion with regard to chronic rheumatism is due to the loose manner in which the term "rheumatoid arthritis" is used. Is it not possible to arrive at some sort of general agreement as to the precise limitations of the term? I would propose that the designation "rheumatoid arthritis" be definitely confined to the first of the three clinical types Dr. Douthwaite describes:

"... a disease occurring largely in females of reproductive age and characterized by little or no pyrexia, low blood pressure, and unstable pulse rate, scattered pigmentation of the skin, on a basic waxy pallor, generalized wasting in addition to pronounced atrophy of the muscles about the affected joints, visceroptosis, hypochlorhydria, exaggerated tendon reflexes, and symmetrical swellings of smaller joints, particularly those of the fingers. The skin over the affected articulations is pale and atrophic, and local tenderness to pressure is never a striking feature. With the exception of increased translucency, bony change is absent for months or years."

Dr. J. A. Glover, in the Ministry of Health report on chronic arthritis (page 5), also refers to this type of case as follows:

"... the singularly acute and intractable form which occurs for the most part in quite young women undoubtedly merits some special mention. In this variety the initial attack is usually particularly severe and the resemblance (before described) to rheumatic fever unusually close. A recognizable focus of infection is

seldom seen in this form of the disease, and little or nothing is known of its etiology. It usually ends in the pathological variety known as 'atrophic.' It is of great importance from one point of view, in that, from its peculiar intractability to treatment, it has in no small measure helped to produce the pessimistic frame of mind with which the majority of the profession and laity alike have been wont to regard all chronic arthritis, many forms of which are, fortunately, much more amenable to treatment."

Although the two descriptions do not quite coincide there can be no doubt that both authorities are referring to the same condition. If it could be agreed that the term "rheumatoid arthritis" should be strictly limited to the above-described condition as it occurs in women of reproductive age, current ideas as to the terminology of chronic rheumatic affections would undergo a much-needed clarification. Such a limitation of the term would, of course, imply that the condition is wholely confined to women. Any joint condition in the opposite sex which in any way approaches it could quite well be described as atrophic arthritis, infective arthritis, or focal arthritis. Of course, there is a type of joint affection due to the presence of some focus of infection which arises in both sexes, but the term "rheumatoid arthritis" should not be used in that relation. It appears to me that if a definite sex incidence is ascribed to the condition in question, the gain in lucidity of description would amply compensate any problematical loss in accuracy.—I am, etc.,

London, W.1, June 7th. MATTHEW B. RAY.

VITAMIN A IN INFECTIVE CONDITIONS.

SIR,—I am sure all students of medicine will feel on reading in your issue of June 1st (p. 984) the paper by Professor E. Mellanby and Dr. H. N. Green that a new vista of rich promise has been opened out by their work. Whether their efforts have solved the hitherto elusive problem of streptococcal septicaemia or not, it seems clear that their very interesting preliminary experimental work will remain as a permanent milestone on the road of scientific progress. My object in writing, however, is not to eulogize this brilliant work, but to record briefly two cases in which radiostoleum (a product containing vitamins A and D) was used as a result of their previous paper in the *British Medical Journal* of October 20th, 1928 (p. 691).

Case 1.—A medical man developed a febrile attack last February, the temperature on one occasion reaching 105° F. A blood culture yielded a pure growth of *B. proteus*. He had frequency of, and severe pain on, micturition; there was pus in the urine and, later, some albumin in centrifuged specimens. His pulse at one stage was over 120, and of such a character as to cause grave anxiety. Prior to this febrile attack he had suffered for some time from more or less annoying dyspeptic symptoms. In addition to merely symptomatic treatment, he was given radiostoleum capsules and inoculations of an autogenous vaccine in very small doses. After one slightly larger inoculation some aggravation of the patient's symptoms appeared to result, and the vaccine was discontinued; but at this stage his serum agglutinated strongly the bacillus, which had been isolated. He eventually recovered. There was, however, nothing dramatic about the result, but it leaves the impression that radiostoleum is worth a trial in infections of this type, which are presumably of intestinal origin.

Case 2.—A patient suffering from very intractable furunculosis was given radiostoleum two months ago and inoculations of an autogenous vaccine. His condition still remains unsatisfactory.

One hopes that in our endeavours to ascertain the therapeutic value of vitamin A some attempt may be made to identify the exact nature of the infection in each case, as it seems *a priori* improbable that all patients suffering from infective conditions are predisposed to infection by vitamin deficiency.—I am etc.,

Manchester, June 5th. J. STAVELY DICK.

RELATIONSHIP OF ALASTRIM (VARIOLA MINOR) TO SMALL-POX (VARIOLA MAJOR).

SIR,—Dr. E. G. Fenton (June 8th, p. 1060) takes the view that variola minor and variola major are one and the same disease, and he advances the theory that the mild nature of variola minor is "entirely due to the fact that vaccination has now been extensively practised in Great Britain for over a hundred years," and has in consequence created a sort of hereditary immunity comparable to the immunity to malaria enjoyed by certain native races. Such a theory is, of course, attractive, as it affords a simple explanation of the remarkable mildness of present-day small-pox, while at the same time paying a graceful tribute to vaccination. I have heard it seriously propounded on many occasions. Unfortunately, a very little reflection will show that the theory is quite untenable. The chief arguments against it are as follows:

1. When variola minor invades an unvaccinated community like the city of Leicester (where compulsory vaccination was abandoned over forty years ago, since when 90 per cent. of the children born have not been vaccinated) it should, if the theory were sound, show a greater severity than in places where vaccination has been normal. Forty years without vaccination should surely be enough to weaken this "hereditary" immunity. But what are the facts? Variola minor is just as much variola minor in Leicester as elsewhere. During the past twenty-five years there have been some 300 cases of small-pox in Leicester without a single death. The last fatal case occurred in June, 1904. This may come as a surprise to Dr. Fenton, and to many others also, but it is nevertheless true.

2. On the other hand, when variola major appears in any part of Great Britain it quickly reveals its true nature in spite of Dr. Fenton's postulated "hereditary" immunity. There have been several instances of this in recent years, the latest being the *Tuscania* outbreak. Hereditary immunity did not do much to reduce the severity of the disease in these outbreaks.

3. Lastly, there is no true analogy in the immunity of native races to malaria. Such immunity is the result of natural selection, and is easily understandable; but what Dr. Fenton postulates is a hereditary immunity resulting from an *acquired* artificial immunity acting through some four generations. I think that any authority on heredity would say that there is no more likelihood of such a result than that the racial custom of circumcision should shorten the length of the prepuce. For, after all, "there's a divinity that shapes our ends, rough-hew them how we will"!—I am, etc.,

Leicester, June 8th. C. KILLICK MILLARD.

APPARENT RECURRENCES OF SCARLET FEVER.

SIR,—I was especially interested in Dr. Kelleher's article on recurrences of scarlet fever, in your issue of June 1st (p. 986), because I have seen one very unusual recurrence of the disease in the case of two brothers whom I treated.

In May, 1927, I was called to see a boy, aged 11, who had all the typical symptoms—erythema, severe throat symptoms, strawberry tongue, circumoral pallor, and a temperature of 102°. On my informing his mother that he had scarlet fever, she immediately protested that he had had similar attacks during the month of May in two preceding years, and that on each occasion he had been treated as a case of scarlet fever. I was dubious of this statement and did not pay much attention to it, especially when six days later a young brother, aged 3, developed typical scarlet fever. Desquamation occurred in both cases and the disease ran the usual course.

In May, 1928, I was called to see the same boy, who again had every symptom of typical scarlet fever. I asked my partner and the medical officer of health to see him, and both agreed with my diagnosis. Five days later the same young brother developed it, and both again followed the usual course, including considerable desquamation. In both years the boys had been in contact with scarlet fever at school, and there were numerous cases of it in the locality. This year both boys escaped.

I think there is no doubt that these were true recurrences.—I am, etc.,

Harrow, June 6th. H. P. WALSH, M.B., B.CH.

ANAESTHESIA FROM THE SURGEON'S STANDPOINT.

SIR,—The article by Mr. Basil Hughes on progress in anaesthesia from the surgeon's standpoint (May 18th, p. 897) interests me, but from the anaesthetist's standpoint. It certainly shews that some effort is being made to advance, though it is extremely small and slow. One reason for this is the common belief that anyone is capable of giving an anaesthetic, and that no special knowledge is necessary. Taken generally, fees are in proportion to this idea, and therefore medical men are not encouraged to specialize in this branch of medicine. I have seen Mr. Basil Hughes operate, and can therefore appreciate why he is so partial to local and spinal anaesthesia.

The avertin anaesthetic (rectal) which he mentions has certainly given good results on the operating table, and afterwards, according to the report from St. Luke's Hospital, Bradford. The number of cases quoted—namely, 100—is very small, though, in my opinion, the way it is used there for a very light anaesthesia, in combination with 0.5 per cent. novocain solution locally, tends to safety.

The experience of the German originators has not been quite so happy. Killian, in 13,000 cases, mentions four deaths from ulcerated bowel (a difficulty which I believe is said to be overcome now), and there have been other deaths. Drs. Blomfield and Shipway, in the *Lancet* (March 16th), report 128 avertin anaesthetic cases, with two deaths. I know the cases were bad ones, but when this death rate is compared with the 1 in 2,000 death rate from chloroform (admittedly a most poisonous drug), I think there will have to be much more work done before the use of avertin becomes general. There is, however, no doubt of its convenience from the surgeon's standpoint.

Mr. Basil Hughes is rather hard on inhalation anaesthesia, for it has some valuable advantages—for instance, control. With spinal and avertin, or rectal ether, once the drug has been given the anaesthetist has lost all control. With the inhalation anaesthetics, on the other hand, a considerable amount of control remains, especially with nitrous oxide and oxygen, which is removed from the patient in about twenty seconds at will. If Mr. Basil Hughes had tried out nitrous oxide under good conditions he would have found his mortality decreased still further, and all the advantages of post-operative comfort and absence of vomiting for his patients. The experience in the United States of America bears out this view.

Gas and oxygen is not used extensively in England because of the harm that Boyle's apparatus and its modifications have done. This apparatus is misnamed in being called a gas and oxygen apparatus; really it is an ether apparatus for use in conjunction with gas. It is because anaesthetists try to give gas and oxygen with this or similar apparatus that we get experiences like the following:

> I was asked to give an anaesthetic for an old patient of mine who was to undergo an operation for panhysterectomy. I proposed to give gas and oxygen, but the surgeon said that in his experience this anaesthetic was a failure. I said, "It won't be a failure this morning, and, moreover, the patient won't be sick afterwards." After the operation, which took an hour and a half, the surgeon said, "Well! you've converted me; the anaesthetic has been excellent, and I had no trouble to do my work." The patient never vomited, nor was she ill in any way; she made a perfect recovery.

I do not claim to be specially clever, but I had an apparatus which was reliable and would do the job. I could not have done it with a "bubble bottle," because the oxygen control is not within 15 to 20 per cent. If I had to work with such a machine I should give it up, and agree with those who say that nitrous oxide and oxygen is impossible for abdominal work, and not very suitable for any long operation.

During the past twelve months I have used gas and oxygen for twelve hysterectomies, many gall-stone cases, several gastro-enterostomies, and any number of appendix cases. There have been no deaths. Given a careful surgeon there is no reason at all why nitrous oxide and oxygen, with its almost negligible mortality and morbidity, should not be used for every operation that is within the range of modern surgery. With the "bubble bottle" apparatus it is even necessary to use ether for an empyema case; but with a gas apparatus, with proper control, that would be unthinkable. I sincerely hope that more of our anaesthetists and surgeons will look closely into this matter, especially the younger ones.—I am, etc.,

Doncaster, June 7th. E. J. CHAMBERS.

"ANTIVIRUS" THERAPY.

SIR,—In your issue of May 25th (p. 955) is published a report of a paper on vaccine therapy by Professor Besredka, which was read at the annual general meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine. In view of the considerable criticism which this paper aroused, perhaps you will allow me to make a few observations.

In the first place, it would seem from the report that the terminology used in the paper was confusing. The terms "vaccine" and "antivirus" appear to have been used throughout as if they were synonymous. But the term "vaccine," as usually understood, implies a suspension of dead bacteria prepared from a young culture, whereas Besredka uses the term "antivirus" to denote an inhibitory substance produced in an old broth culture.

It is unfortunate that the term "vaccine" employed in the paper was not more clearly defined, but, be that as it may, there seems no doubt from a laboratory point of view that filtrates from old broth cultures do possess remarkable inhibitory power; my own experiments lead me to believe that this phenomenon is not due to exhaustion of food materials, or to production of waste products. On the clinical side I am not qualified to speak, but I would refer to a paper by Buchanan[1] which was abstracted in a recent issue of the *British Medical Journal* (*Epitome*, April 13th, para. 373), and which gives an impressive list of cases, all suppurative or inflammatory conditions, in which broth filtrates were used with remarkably good effect.

My own view is that these filtrates act as fairly powerful antiseptics on bacteria such as staphylococci in purulent lesions, without in any way harming the body cells. Whatever may be the immunological theory underlying this action, the method seems worthy of extended clinical trial, and it would be unfortunate if the criticism which Besredka's paper evoked should tend to discourage further trial of antivirus therapy in practice.—I am, etc.,

Barnet, June 5th. R. F. HUNWICKE, B.Sc.

NATURAL AND ARTIFICIAL FOODS.

SIR,—Living somewhat off the beaten track, we, in the northern parts of Western Australia, get a mail but once in two months, and so I have only recently seen the *Journal* of December 15th, 1928, containing an article by Mrs. Mellanby and Dr. Pattison. I judge from it that the breakfast-table conversation of the future will be: "Tommy, have you taken your radiostol?" "Don't want no radiostol—want an apple."

Personally I don't know whether radiostol has any effect on the teeth or not; what I do know is that in England and America, where denatured or so-called refined cereals are eaten to the total exclusion of the natural grain, dental caries is increasing by leaps and bounds—so also are cancer and other diseases. In Western Australia, where white flour is in common use and the soil is deficient in calcium and phosphorus, it is quite common to find persons under 20 years of age without a natural tooth in their heads. I remember one poor little chap, aged 5, without a tooth showing, and the 6-year molars were irrupted decayed. That is one side of the picture.

Since 1900 I have lived in South Africa, West Africa, India, and now Australia. In Sierra Leone, when I was there, the natives lived on natural grain, fish, and game. There was no milk; owing to the tsetse fly no domestic animal could live on that coast. In South Africa the staple diet consisted of mealies, the millets, game, and milk. In the Punjab the staple diet is unleavened bread made of atta or whole-grain wheat flour, curried vegetables, dhal with a little ghee or clarified butter, and sour milk; they also eat a good deal of ghura or unrefined sugar as it comes from the cane, and, in the season, chew sugar cane. In the northern parts of Australia the aboriginal natives toil not, neither do they spin, but live on roots, fish, game, and, in the wet season, on beef. To those who say meat is bad for us I would mention that recently three natives were brought before me for cattle killing, and it came out in evidence that not more than fifteen natives had, in four days, killed and eaten three bullocks; the bullocks, or those parts of them eaten by aboriginals, would weigh about 600 lb. a carcass.

To return to the food question. All these people living on the edge of or outside civilization have one, and only one, food factor in common, and that is the consumption of

[1] *Journal of the Medical Association of South Africa*, January 26th, 1929, p. 37.

the whole grain of their cereal food. Dental caries is rare among these people, and also deformed jaws. I estimate that I examined the mouths of two or three thousand natives in India of military age and of all castes below the fighting caste. At the end of the dry season, when green food was unprocurable, I noted that pus could be expressed from the margin between gum and teeth, but with the advent of green food this condition cleared up; dental caries was negligible. I presume that all medical men know that white flour is made by sifting out the germ and bran of wheat; further, that the germ and bran contain the vitamins and vegetable salts of metals necessary both for the life of the wheat and for animal life. I wish to stress the fact that the salts contained in the wheat germ and bran are absolutely essential for animal life, and, further, that they are necessary for the complete digestion of the starch and gluten of white flour. In my opinion, whenever the fruits of the earth are contained in a palatable skin, that skin should be eaten, since it is required for the complete digestion of that fruit. I was taught, when learning physiology, that certain salts were necessary for life; presumably, the same truth is still taught. Why, then, does the medical profession allow, without protest, the miller to reject as pig food the bran and germ of wheat? I believe the answer is that the germ and bran are indigestible. A more fallacious argument or greater perversion of the truth was never uttered. If whole wheatmeal bread is not properly masticated, of course it is not digested; thoroughly masticated, it is one of the best of cures for dyspepsia and constipation that I know.

To the dietitians and others who deal in calories, to veterinary surgeons, stock-breeders, and others who eat denatured grains, I put this question: If denatured grain is best for you, surely it must be best for laboratory and stud animals; why not feed them on it? It is time the medical profession paused and thought before going into the virtues of radiostol and other vitamins. Our ancestors, and millions of people of to-day, living on foods as God gave them, and knowing nothing of vitamins, vegetable salts, calories, etc., maintained and maintain themselves in rude health, their only guide being their appetite. Remarks to the effect that a teaspoonful of gravy a day will supply this, a teaspoonful of yolk of egg will supply that, and one lettuce leaf a fortnight will supply the other thing are listened to with grave attention by the public when uttered by eminent medical men. Such remarks are, to say the least, misleading.

Before the children of Israel crossed over into the Promised Land, Moses harangued them and made the following promise: "Wherefore it shall come to pass, if ye hearken to these judgements, and keep, and do them, that the Lord thy God shall keep unto thee the covenant and the mercy which He sware unto thy fathers. . . . And the Lord will take away from thee all sickness, and will put none of the evil diseases of Egypt, which thou knowest, upon thee; but will lay them upon all them that hate thee." The quotation at first sight seems irrelevant, but I take it to mean, among other things, that simplicity of feeding was to continue. Wherefore, I ask the heads of the profession to pause and ask themselves: Where are we leading the nation? The cause of dental caries is undoubtedly the lack of cereal salts and hard chewing; the diet of grain-eaters proves this. It is more than a fifty-fifty chance that cancer is a food-deficiency disease, and similarly with acidosis, beri-beri, pellagra, and so forth.

I repeat: In which direction are the heads of the medical profession going to lead—back to perfect food as God gave it, and health, or onwards to vitamins, denatured foods, and disease? The laity will follow and trust us. Which is it to be—the health and prosperity of the British nation, or the death of the nation and its replacement by a whole-grain-eating coloured people? The world is outside the laboratory and will not wait for the evolution of the large-brained, jawless, and puny-bodied being who will live on tabloids.—I am, etc.,

F. W. COTTON,
Lieut.-Colonel R.A.M.C.(ret.).

Wyndham, Western Australia,
April 12th.

Obituary.

SIR CHARLES O'BRIEN HARDING, M.R.C.S.,

Past-President, Sussex Branch, British Medical Association, and thrice Mayor of Eastbourne.

SIR CHARLES O'BRIEN HARDING, who died at Eastbourne on June 7th, aged 70, was the son of Dr. J. F. Harding. Educated at Epsom College, he proceeded for his medical studies to the Sussex County Hospital and to St. Bartholomew's Hospital, obtaining the diploma of M.R.C.S. in 1883 and the L.R.C.P. in 1886. He was house-surgeon at St. Bartholomew's from 1883 to 1884, and then for a short time was a surgeon with the Orient Steam Navigation Company. He went to Eastbourne to practise in 1891.

Although enjoying a considerable practice, Sir Charles Harding will be remembered locally mainly on account of his extraordinary interest in municipal and other public affairs in Eastbourne. His record of service in public life is probably unsurpassed by that of any other medical man. After five years' practice in Eastbourne he was elected to the town council, and remained a member of the council, first as councillor and later as alderman, until early in 1929, when he resigned his position as alderman on account of failing health. He first served as mayor of the borough in 1902–3; he was again mayor from 1915–20 during the most difficult parts of the war years, and again in 1924–25. His services were so untiring and successful, particularly as mayor during the war, that a knighthood was conferred upon him in 1920. On the borough council his interests were very wide. He was particularly valuable in connexion with the sanitary work of the town. He also occupied at different times the chairmanship of the Watch Committee, the Finance and General Purposes Committee, and the Education Committee, as well as that of the Public Health Committee. He probably gave his most conspicuous service as chairman of the Finance Committee; his speeches as chairman of that committee, and particularly at the times of the making of the rates, will always be remembered for their remarkable lucidity, the multitude of figures regarding the finances of the borough being quoted without the aid of notes. Not content with his membership of the Eastbourne Borough Council, he served also as a member of the East Sussex County Council until Eastbourne became a county borough. In 1903 he was made a justice of the peace, and he also received the very unusual honour of being made a freeman of the county borough.

Sir Charles O'Brien Harding's devotion to municipal work did not end his activities. He was chairman of the Princess Alice Memorial Hospital, with the management of which he had been actively associated for many years. He was chairman of the Queen Alexandra Cottage Homes, and deputy chairman of the Eastbourne College Council. He was for a time in the R.N.V.R. as a lieutenant commander. He was president of the Eastbourne Horticultural Society, a director of the local building society, and also a director of the Eastbourne Waterworks Company. In fact, there were few activities in Eastbourne in which he had not a very active share. If anything of importance was to be undertaken in Eastbourne one of the first steps was to get Harding to act either as president or chairman, or in any case to take a leading part in the movement. All Freemasons will remember him as being especially well known in the craft. For a long time he was Director of Ceremonies for the Province of Sussex, and a Past Grand Master in the Mark degree. Only recently he had a beautiful testimonial given him for presiding over the Mark Mason Charity Festival. He was for many years an active member of the British Medical Association, serving as vice-chairman of the Eastbourne Division in 1907 and chairman in the following year, and remaining a member of the Executive Committee until 1916. He was president of the Sussex Branch in 1923–24, and was elected vice-president in 1927.

It was a very great advantage to Eastbourne that Sir Charles O'Brien Harding settled there and gave such valued service as a citizen. It is unfortunate that, as a rule, medical men have not more time to devote to municipal

service. The universal sense of loss which is felt in Eastbourne is a testimony to the service he gave in practically every direction. Besides the many people who have lost a great friend, the town as a whole is in mourning for the death of one of its most active and useful citizens.

While at Bart's Harding was a renowned Rugby footballer, and in his time played also for Middlesex and England. His interest in sport did not end when he settled in Eastbourne. He was on the committee of the Eastbourne Cricket and Football Club for many years, and acted for a time as its treasurer; he was also influential in resuscitating Rugby football in Eastbourne. The high regard in which his colleagues and fellow students held him may be judged from the fact that he was the only country general practitioner who took the chair at a St. Bartholomew's Hospital past and present dinner. The serious epidemic of influenza during the past winter claimed him as one of its victims; he never thoroughly recovered from his attack, and died of heart failure.

W. G. W.

SIR WILLIAM FAIRBANK, K.C.V.O., M.R.C.S.,

Honorary Surgeon-Apothecary to His Majesty's Household at Windsor.

WE regret to record the death, in his seventy-ninth year, of Sir William Fairbank, which took place on June 10th at his home at Windsor.

After receiving his early education at the Forest School, Walthamstow, William Fairbank entered, in 1868, as a medical student at St. Bartholomew's Hospital, where he was dresser to Sir James Paget; in 1872 he obtained the Licence of the Society of Apothecaries, and was admitted a member of the Royal College of Surgeons of England in the following year. In 1875, having completed an appointment as resident medical officer to the Royal Albert Infirmary, Wigan, he went as house-surgeon to the Rotunda Hospital, Dublin, and in 1877 became a licentiate in midwifery of the Royal College of Physicians of Ireland. In 1880 he was appointed surgeon-apothecary to Queen Victoria's Household at Windsor, and surgeon to Prince and Princess Christian, in place of his elder brother, Dr. Thomas Fairbank, who had just died suddenly. He then became in turn surgeon-apothecary at Windsor to Queen Victoria, to King Edward, and to King George.

Sir William Fairbank held a number of hospital and public appointments. For many years he was surgeon to the Windsor Royal Infirmary, being at the time of his death honorary consulting surgeon to its successor, the King Edward VII Hospital; he was local consulting physician to the Royal Ventnor Hospital for Consumption; chairman and president of the Royal Albert Institute at Windsor; examiner, and for thirty-nine years lecturer, to the Order of St. John of Jerusalem; a member of the Berkshire County Council, and from 1919 to 1920 mayor of Windsor. In recognition of his many services he was created M.V.O. in 1911, and promoted C.V.O. in 1921 and K.C.V.O. in 1924. In 1921 Fairbank was a member of the delegation of British mayors who visited the devastated areas of France, and after Windsor had adopted Hardecourt-aux-Bois he raised funds for the reconstruction of the village, which afterwards he visited every year. In appreciation of his efforts the inhabitants of the village renamed after him their square and main street.

Sir William Fairbank married in 1879; he is survived by two sons and three daughters.

DR. JOHN BROWN, who died near Capetown on May 7th, in his eighty-sixth year, received his medical education at Aberdeen University, where he graduated M.D. (with honours) and C.M. (highest honours) in 1863. After spending ten years in Wynberg, Cape Colony, where he built up a successful practice, he returned to Edinburgh, and became demonstrator in anatomy at the University. In 1877 he took the diploma of public health, Cambridge, and in 1878 the Fellowship of the Royal College of Surgeons of England, and a degree in public health at Edinburgh. We are indebted to Dr. Athelstane Nobbs for the following appreciation: So well equipped was John Brown that he might successfully have invaded Charlotte Square, or come South to the purlieus of Cavendish Square, but he elected to work among the workers of Lancashire, and became junior partner to a Dr. Briggs in Burnley. In due course he became the senior partner when a certain brother Aberdonian, one James Mackenzie, became the junior—Brown being the surgeon, as it were, and Mackenzie the physician of the partnership. There can be no doubt that the man who later was to become the acknowledged master of the science of cardiology benefited by this early collaboration, and to the end Sir James Mackenzie, as he became, and his old senior, whose partner he had been in Burnley for twenty years, were the closest friends. John Brown, who, by the way, was a cousin of his namesake, the author of *Rab and His Friends*, had married a daughter of a former Premier of Cape Colony, and when he retired from practice, shortly after the South African war, returned to the Cape, but never to idleness. He leaves behind him the memory of one of God's good men, absolutely straight and humane, a scholar void of pedantry, with the capable hands of the ideal surgeon.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on June 8th the following medical degrees were conferred:

D.M.—G. I. Evans.
B.M.—R. M. J. Harper, D. C. Shields, M. V. Bhajekar, H. G. Wells.

UNIVERSITY OF CAMBRIDGE.

DR. R. A. WEBB has been appointed University Demonstrator in Pathology, and Messrs. G. Anrep and H. E. Tunnicliffe University Demonstrators in Physiology.

At a congregation held on June 8th the degree of Bachelor of Medicine (M.B.) was conferred on R. Gallimore.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—*†C. F. Cosin, *‡§E. A. Hunter (University medal), *†A. L. Light, *‡E. G. M. Palser, *‖S. F. Russell, *‖H. A. H. Selbourne, *‡C. E. W. Wheaton, Lucy E. Arthur, Mabel A. Baker, C. G. Bowen, Annie G. Busher, E. C. B. Butler, Alison M. Clark, Rosa O. J. Clark, S. L. A. Clarke, Joan C. Clatworthy, F. S. Cooksey, Hilda C. Dean, C. G. de Couilliard, V. P. de Zoysa, C. J. Donelan, D. E. Dunnill, Dorothy V. Dunolly, A. M. Easton, A. C. Elkin, C. N. Evans, G. S. Ferraby, Kathleen E. Gambrell, I. Gordon, D. P. Gray, Bridget S. P. Gurney, C. E. Hagenbach, Emily M. Hall, H. N. W. Harley, R. L. Harward, F. F. Hellier, C. F. Howes, E. C. H. Huddy, W. F. Hudson, H. E. James, P. Kaplin, D. W. S. Kaye, H. J. Krichefski, S. C. H. Lane, A. J. C. Latchmore, I. B. Limbery, G. H. Livingstone, W. S. McConnell, J. V. Macgregor, M. L. Mistri, Anna P. Montgomery, Jocelyn A. M. Moore, Joyce Morgan, D. T. R. Morris, C. B. Nicholson, C. G. MacM. Nicol, C. G. Paine, Keren I. Parkes, G. C. Pether, A. P. Petigura, C. B. Picken, Betty J. W. Pilsworth, G. L. S. Plumbly, H. W. A. Post, I. Preiskel, K. H. Pridie, E. I. Puddy, W. G. Richards, Marjorie E. Roberts, I. M. Robertson, R. D. Robinson, Janet M. Rocke, A. P. Ross, A. S. D. Russell, Beatrice A. Savill, J. E. Schneider, E. M. Sharples, D. Shaw, C. G. Sinclair, N. Sinnadurai, E. J. J. Smith, P. A. M. Soutter, J. B. Sugden, A. R. Thompson, F. S. Thornton, Decima M. Tracey, Frances J. Vinter, Nora W. Wamsley, A. J. Watson, S. A. Wickramasinghe, P. Wiles, W. A. Wilson, A. Wiseman, E. A. Wood, Joyce R. Woods, Mary Worthington, T. C. Yip, B. A. Young.

Group I.—Ellen M. Barnes, J. N. Bhada, C. V. Bloom, W. E. R. Branch, Eileen A. Chennell, Mabel J. Cooke, W. V. Cruden, Catherine Day, R. F. Fidler, Alice E. N. Gilby, D. R. Griffith, E. Grundy, F. R. Gusterson, G. F. Harrison, E. F. Hewlitt, J. F. L. King, G. Lee, Dorothy M. Lufkin, Dorothy F. McIntosh, T. H. Negus, A. T. Pagan, L. M. J. A. Pilot, J. C. Saldanha, C. P. Scott, Mary Scouloudi, Mary E. Sharp, R. Shelley, A. G. Signy, Marjorie V. N. Sudds, K. G. Sugden, C. B. V. Tait, L. E. Vine.

Group II.—A. M. Boyd, Bertha A. Briant, Lilian P. Edwards, H. K. Evans, R. Evans, B. M. Fonseka, Ruth C. Galletly, V. F. Hall, Margaret L. Hamburger, G. B. M. Heggs, R. A. King, K. E. Lane, L. P. E. Laurent, A. Levy, F. J. G. Lishman, F. W. Martindell, R. Oliver, R. Purvis, Sylvia M. Ransford, J. A. Robson, R. C. N. Shires, W. D. Steel, S. A. Underwood, E. M. Wijerama, N. R. W. Wynn-Williams.

* Honours. † Distinguished in Medicine.
‡ Distinguished in Forensic Medicine. ‖ Distinguished in Surgery.
§ Distinguished in Midwifery.

UNIVERSITY OF DURHAM.

ON June 5th the Duke of Northumberland was installed as Chancellor of the University of Durham, in succession to the late Earl of Durham. The first part of the ceremony was held in the quadrangle of Durham Castle, where the Vice-Chancellor, Sir Thomas Oliver, M.D., conferred upon the Duke the degree of D.C.L. by diploma and installed him in office. After a thanksgiving service in the cathedral, when an address was given by the Bishop of Durham, convocation was resumed in the Chapter House, where the new Chancellor conferred honorary degrees upon a

number of distinguished persons, including the President of the Royal College of Physicians of London and the President of the Royal College of Surgeons of England, who each received the degree of D.C.L. Sir John Rose Bradford was presented by Professor Stuart McDonald (Dean of the College of Medicine) and Lord Moynihan by Professor Grey Turner. The degree of D.Sc. was conferred on Lord Rayleigh, Emeritus Professor of Physics in the Imperial College of Science, and on Dr. C. Tait Regan, Director of the Natural History Museum.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

DR. DENIS JOHN COFFEY, President of the Irish Medical Council, President of University College, Dublin, and Vice-Chancellor of the National University of Ireland, has been unanimously elected an honorary Fellow of the College.

The following candidates, having passed the examination for the Membership, were duly admitted as Licentiates in Medicine and Members of the College: J. Lait and F. MacSorley.

Reports have been received from the representatives of the College on the Irish Medical Council and on the General Medical Council on the recent proceedings of those bodies.

Medical News.

THE William Mackenzie medal for 1928 for original contributions to ophthalmology of outstanding merit has been awarded to Mr. W. S. Duke-Elder of London. The Glasgow Eye Infirmary, the custodians, have made the award on the advice of a committee representative of the University of Glasgow, the surgeons of the Glasgow Eye Infirmary and of the Glasgow Ophthalmic Institution, and the Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow.

PROFESSOR GREY TURNER, M.S., F.R.C.S., professor of surgery in the University of Durham, is taking charge of the teaching in the surgical unit of St. Bartholomew's Hospital, in place of Professor Gask, for a fortnight from June 10th to 22nd. It will be remembered that on former occasions Professor Harvey Cushing of Boston, Professor Hugh Cabot of Ann Arbor, and Lord Moynihan have acted in a similar way.

THE third annual MacAlister Lecture of the London Clinical Society will be delivered at the London Temperance Hospital, Hampstead Road, N.W.1, on Thursday, June 20th, at 8.45 p.m., by Sir Humphry Rolleston, on "Medical friendships, clubs, societies." The lecture is open to all medical practitioners, who are invited to bring their friends, ladies or gentlemen. The honorary secretary, Dr. F. Temple Grey, 86, Harley Street, W.1, will be glad to be notified of those who propose to attend.

A COURSE of instruction in the technique of tissue culture will be given at the Strangeways Research Laboratory from July 9th to August 10th. Only a limited number of applicants can be received. Notification from those wishing to take the course should be sent, not later than June 30th, to Dr. H. B. Fell, Strangeways Research Laboratory, Cambridge.

THE summer meeting of the Section of Otology of the Royal Society of Medicine will be held at Cambridge on June 21st and 22nd. A cinematograph demonstration of a prostatectomy, a litholapaxy, and an internal urethrotomy will be given at the summer meeting of the Section of Urology on June 27th, at 8.30 p.m.

A MEETING of the Biochemical Society will be held at the John Innes Horticultural Institution, Merton, Surrey, to-day (Saturday, June 15th), at 11.45 a.m. The subjects on which communications will be made include: carbohydrate metabolism in avitaminous birds, absorption of liquid paraffin from the alimentary tract of the rat and pig, the association of vitamin A activity with carotene in the carrot root, and the nature of the vitamin A constituent of green leaves.

THE annual meeting of the Incorporated Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded will be held at the Sandlebridge Institution, Alderley Edge, on Friday, June 21st. The chair will be taken by Sir Lewis Beard at 3.15 p.m.

THE annual meeting of King Edward's Hospital Fund for London was held at St. James's Palace on June 11th, the Prince of Wales presiding. In the course of his address His Royal Highness read a message from His Majesty the King, expressing delight at the response which had been made to the recent appeal for funds, and stated that during 1928 the amount distributed had for the first time reached a total of £250,000. Loans of radium, bought with Sir Otto Beit's gift, had been made to twenty hospitals, on the principle that there should be a few hospitals with a sufficient supply to act as radium centres, and a rather larger number with enough radium to provide effective treatment. The Prince paid a tribute to the generosity of the British public, which in the course of a single week contributed the money required for the radium side of the Thank-offering Fund. An account of the proceedings of the meeting will be given in next week's issue.

A CROWDED congregation, consisting largely of patients of the late Dr. R. E. Ingram-Johnson, filled the parish church of South Moor, Durham, on June 2nd, when a brass tablet to his memory was unveiled by Sir Thomas Oliver, Vice-Chancellor of the University of Durham. After its dedication by the Rural Dean, Sir Thomas Oliver addressed the congregation, paying a special tribute to the unselfishness that had always characterized Dr. Ingram-Johnson. Sir Thomas spoke in warm terms of the friendship between them, and mentioned the regret he had felt when Dr. Ingram-Johnson decided to go out to India and later to Malaya. There he had devoted himself particularly to the problem of malaria, and had conducted research which led him to the belief that treatment with the serum of dengue fever cases had a definite curative value in malaria. Dr. Ingram-Johnson, who died in May, 1928, was a strong supporter of the British Medical Association.

THE Fellowship of Medicine and Post-Graduate Medical Association has arranged two lectures for candidates for the M.R.C.P. examination, one by Dr. H. Gardiner-Hill on June 18th, and the other by Dr. Harold Pritchard on June 21st, at 8.30 p.m., at 11, Chandos Street, Cavendish Square, W. A free lecture on the management of patients suffering from cancer of the breast will be given on June 18th, at 4.45 p.m., by Dr. Hernaman-Johnson, at the British Institute of Radiology, 32, Welbeck Street, W. There is one week left of the following courses: in ophthalmology, at the Royal Westminster Ophthalmic Hospital, in diseases of the chest, at the Victoria Park Hospital, Victoria Park, E., in gynaecology, at the Chelsea Hospital for Women. From June 24th to 29th an all-day course in proctology will be given at St. Mark's Hospital for Diseases of the Rectum; fee £3 3s. From June 24th to July 6th the North-East London Post-Graduate College (Prince of Wales's General Hospital, Tottenham, N.) has arranged an intensive "refresher" course in medicine, surgery, and the specialties; fee £5 5s. or £3 3s. for either week. Also beginning on June 24th and continuing until July 7th, the Children's Clinic, in association with several other hospitals, will give a comprehensive course of instruction in diseases of children and infants; fee £2 2s. Copies of all syllabuses, the complete list of special courses for 1929, information on general post-graduate work, and specimen copies of the *Post-Graduate Medical Journal*, may be obtained from the secretary, Fellowship of Medicine, 1, Wimpole Street, London, W.1.

WE are informed by Sir James Barr that the following names are to be added to the signatories of the letter published on May 11th (p. 879) in support of the testimonial to Sir Ronald Ross: Professor Umberto Gabbi (Turin), Professor C. Savas (Athens), Dr. Anton Breinl (Townsville), and Professor C. Schilling (Berlin). A list of contributors to the fund was printed in our last issue (p. 1065). Donations should be sent to Lloyds Bank, Ltd., 110, High Street, Putney, S.W.15, cheques to be crossed "Ross Award Fund a/c."

THE Medical Research Council, after consultation with the Ministry of Health and the Board of Education, has appointed a committee to inquire into the prevalence and mode of spread of minor epidemics in residential schools, especially those believed to be spread by "droplet infection," and to report upon the means by which they may be prevented or restricted. The personnel of the committee is as follows; Sir George Newman, M.D. (chairman), Dame Janet Campbell, M.D., Dr. R. H. Crowley, Surgeon Commander S. F. Dudley, Dr. J. A. Glover, Professor M. Greenwood, F.R.S., Dr. L. R. Lempriere, Miss E. M. Newbold, M.A., and Professor W. W. C. Topley, M.D., with Dr. Joyce Wilson as secretary.

IN continuation of the series of visits to famous buildings in aid of King Edward's Hospital Fund for London, arrangements have been made for parties to visit the Foreign Office, India Office, and Admiralty on Saturday, June 22nd, at 2.45 p.m. On Friday, July 19th, at 4.30 p.m., a party will be conducted round Westminster Abbey, and on August 9th and 21st, at 2.30 p.m., visits will be paid to the Tower of London, when Mr. Walter Bell will give an address on the Tower and its history. Tickets, price 7s. 6d., can be obtained on application to King Edward's Hospital Fund for London, 7 Walbrook, E.C.4.

AT a meeting of the Central Midwives Board for England and Wales held on June 6th, with Sir Francis Champneys in the chair, a letter was read from the town clerk of York, submitting a scheme of lectures to be delivered at York Maternity Hospital by Dr. A. M. Hughes and Dr. Lister. The scheme was approved.

THE Medical Research Council announce that on behalf of the Rockefeller Foundation they have made the following awards of travelling fellowships for the academic year 1929-30: Olive Burton Buckley, B.M., M.R.C.P., King's College Hospital, London; George Aleck Crocker Gough, B.Sc., Ph.D., National Institute for Medical Research,

London; William Robert Henderson, M.B., Royal Infirmary, Edinburgh; Donald Hunter, M.D., F.R.C.P., assistant physician, London Hospital; George Eric Lewis, B.A., M.R.C.S., London Hospital; Moses Myer Suzman, M.D., M.R.C.P., College of Medicine, Newcastle-upon-Tyne; Janet Maria Vaughan, B.A., B.M., University College Hospital, London. These Rockefeller medical fellowships are awarded to graduates who have had some training in research work either in the primary sciences of medicine or in clinical medicine and surgery, and who are likely to profit by a period of work at a chosen centre in America or, in special cases, in Europe, before taking up positions for higher teaching or research in the British Isles. Dr. Gough's fellowship is tenable at the University of Münich; the others at centres in the United States. Dr. Lewis has been appointed on modified conditions while receiving emoluments from another source.

ON June 10th, at the Tower Bridge Police Court, a man charged with obtaining money by false pretences and with intent to defraud, pleaded guilty and was sentenced to imprisonment for three months in the second division. On behalf of the Pharmaceutical Society of Great Britain it was stated that the accused, having represented himself as a fully qualified chemist, obtained the post of manager to a chemist's shop. In substantiation of his claim he had produced a certificate under the Act which, though genuine, had been altered by the substitution of the accused's name for the one it bore originally. The accused, in the course of a statement, said that since he had managed the shop he had dispensed 50,000 prescriptions, and there had never been any trouble and everything had been in order.

THE ninth annual congress known as the Journées Médicales de Bruxelles will be held at Brussels from June 22nd to 26th, under the presidency of Professor Henry Coppez. Addresses will be delivered, among others, by Emile Sergent of Paris, Blum of Strasbourg, Nordenson of Upsala, Spillmann of Nancy, Putti of Bologna, Froment of Lyons, Eastman Sheehan of New York, Gouin of Lausanne, Hymans van den Bergh of Utrecht, and Tricot-Royer of Antwerp. The opening discourse will be given by the Parisian oto-rhino-laryngologist, Dr. Nepveu, who is well known in the literary world, as Luc Durtain. The subscription is 75 francs. Further information can be obtained from the general secretary, Dr. R. Beckers, 62, Rue Froissart, Brussels.

DR. G. WAYLAND ANCRUM of Gloucester and Dr. Richard Davies of Cheltenham have been appointed to the Commission of the Peace for the county of Gloucester.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:
EDITOR of the *British Medical Journal, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 21361 Edinburgh).

QUERIES AND ANSWERS.

UMBILICAL DISCHARGE.

"W. D." writes: Can anyone suggest the cause of an occasional discharge from the umbilicus in a woman of 32? The discharge is serous in character, and occurred first at about the age of 14 years, and reappeared about three years ago.

WATER SOFTENERS.

"MEMBER OF FORTY YEARS' STANDING" asks whether it is advisable to use for the whole of the water supply (Kentish hard water) to his house one of the water softeners on the market. Is the softened water palatable, and does it contain any substance injurious to health? Is any one method of softening specially recommended?

INCOME TAX.

Appointment: Whether Liable to Tax.

"W. H. P." first commenced earning a salary in September, 1926, as an assistant, and his earnings have been as follows:

September, 1926, to December, 1926	£69
Year to December, 1927	£231
Year to December, 1928	£290
Three months to April, 1929	£109

He inquires whether he is liable to assessment, and as to what steps he should take.

*** He is liable as follows:

For the year 1926-27: £69 + one-quarter of £231—that is, £127—exempt.
For the year 1927-28: three-quarters of £231 + one-quarter of £290—that is, £245—£6 18s. tax.
For the year 1928-29: three-quarters of £231 + one-quarter of £290—that is, £245—£6 18s. tax.

In explanation of the above the basis of assessment was the current year's earnings up to 1927-28 inclusive, and afterwards the previous year's earnings; in calculating the tax payable only earned income relief and the £135 personal allowance have been deducted; any life assurance relief would reduce the tax payable still further. It will probably be best for "W. H. P." to get in touch with the local inspector of taxes and make his formal returns.

Change of Employment.

"R. C. F. S." was acting as a general assistant to December 20th, 1927, and became a school medical officer under a public authority as from January 1st, 1928. What is his correct basis of assessment for the year to April 5th, 1928?

*** The actual amount of his earnings for that year. Where a substantial change in the nature and conditions of the employment takes place, as has occurred here, the correct method is to regard the former employment as having ceased and a new one as having commenced. The facts do not justify a claim to continuity of employment.

LETTERS, NOTES, ETC.

THE COCKTAIL HABIT IN FRANCE.

IN our issue of January 5th (p. 31) we noted Professor W. E. Dixon's warning about the injurious effects of cocktail addiction; recently a similar denunciation has been made at the Académie de Médecine by Professor Georges Guillain, who occupies the chair of nervous diseases in the Paris Faculty of Medicine. Before the war, he states, this practice, imported from America, had been confined to certain sections of French society, particularly racing, literary, and dramatic circles, but lately it has become prevalent among the well-to-do classes generally. The cocktail bar is to be found not only in hotels and restaurants, but even in the homes of the rich. Furnishing firms make it their business to supply more or less elegant bars suitable for drawing rooms, even for motor cars, while special hampers containing the ingredients and utensils used in the preparation of cocktails are on sale everywhere. As in this country, the principal victims of the habit are young men and women of the "smart" set, and among them Professor Guillain has often found obvious signs of chronic alcoholism. Commonly met with are digestive disturbances, manifested as loss of appetite, hyperchlorhydria, pyloric spasm, congestion of the liver, and enteritis, and such circulatory symptoms as tachycardia, precordial pain, and a tendency to syncope. The most important disorders, however, are referable to the nervous system, and include insomnia, physical and psychical asthenia, depression, and disinclination for mental work. In several instances epileptic attacks, attributed to the cocktail habit, have occurred for the first time in individuals of 25 to 35 years of age. Professor Guillain urges that young people of the wealthy classes should be enlightened as to the disastrous effects of cocktail drinking, both on their own physical and mental equilibrium and on that of their descendants.

VOTES FOR EPSOM COLLEGE.

DR. BERNARD ROWLANDS (London, N.15) writes: I appeal on behalf of John Horace Brockman White to any who have votes for Epsom College. Contemporaries of his father, Charles Powell White, M.A., M.D.Camb., F.R.C.S.Eng., who knew him as a good surgeon and research worker, will regret to know that this appeal is necessary.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 41, 42, 43, 47, 48, 49, and 50 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44, 45 and 46.

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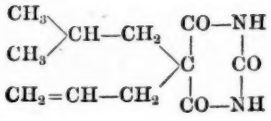

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A British Medical Association Lecture ON DIFFICULT LABOUR.*

BY

R. W. JOHNSTONE, C.B.E., M.A., M.D., F.R.C.S.ED.,
PROFESSOR OF MIDWIFERY AND THE DISEASES OF WOMEN, EDINBURGH UNIVERSITY.

EVERYONE with obstetrical experience will agree that the commonest cause of difficulty in labour is the occipito-posterior position of the vertex. Probably the second most frequent cause is breech presentation.

OCCIPITO-POSTERIOR PRESENTATIONS.

Considering how small is the deviation from the normal, the amount of trouble and worry which occipito-posterior positions cause is astonishing. Difficulty, of course, arises mostly in those cases in which the occiput fails to rotate spontaneously to the front, and this is due mainly to a lack of complete flexion of the head. It is elementary knowledge that an imperfectly flexed head throws larger diameters across the pelvis than a completely flexed one, and in the case of occipito-posterior positions this results in, first, late engagement of the head at the brim of the pelvis; secondly, a tendency to arrest and impaction of the head when it is in the cavity; and thirdly, great difficulty in the birth of the head, face to pubes.

The late engagement or arrest of the head at the brim, which occurs in some occipito-posterior cases, is largely due to the wide posterior part of the head trying to get into the pelvis through the sacro-cotyloid diameter, which is rather small for it. An important corollary is that this arrest of the posterior part of the head tends to a still further undoing of flexion and a consequent increase in the antero-posterior measurements of the head thrown across the pelvis. The degree of misfit which is thus present between the presenting part and the brim of the pelvis may lead to the membranes protruding through the partially opened os in a sausage shape; and, as always, such membranes are peculiarly liable to early rupture. Cases, therefore, in which there is considerable arrest of the head at the brim of the pelvis are often further complicated by the labour becoming a dry one. The result in such cases is a prolonged and painful first stage, dragging on hour after hour and it may be day after day, with intervals during which the pains, in some cases never properly efficient or regular owing to the lack of proper pressure by the head and the bag of membranes upon the region of the internal os, tend to cease altogether.

In time, however, the cervix becomes completely dilated and the moulded head slowly passes down through the pelvis, delay being experienced throughout, owing to the large diameters of the head. The crucial point is when the head reaches the pelvic floor. Where the flexion has been complete and the first stage more or less normal, the occiput rotates to the front without any great difficulty, but in the cases which we are considering, where flexion is imperfect, there is often great delay in the occurrence of rotation. In many cases the head remains in the oblique diameter of the pelvis simply because the uterus has become too exhausted to cause rotation; in other cases the deflexed head becomes impacted upon the ischial spines, while in still others, in which the degree of deflexion is even more marked, the sinciput becomes the leading part of the head, and is rotated to the front, while the occiput slips into the hollow of the sacrum. Delivery with the head in this position involves the passage through the outlet of the pelvis of diameters which are probably from a half to three-quarters of an inch longer than in a normal labour, with the consequence that great force must be exercised either by the uterus or by the forceps, and that a deep tear of the perineum is almost inevitable. All of us have experienced cases illustrating difficulty at any or all of the stages I have mentioned, but it may be helpful to consider them calmly in an atmosphere more judicial than the lying-in chamber.

* Abstract of a lecture delivered before the Blackburn Division on February 27th.

Diagnosis.

Before making any remarks with regard to treatment I must refer to diagnosis, because every year's increasing experience has brought it home to me that failure to recognize the occipito-posterior position is a more fruitful source of worry and suffering and disappointment than almost any other diagnostic error in midwifery practice.

Ante-natal examination will, in most cases, reveal the occipito-posterior position. The method of examination is abdominal and depends in the main upon failure to recognize the continuous resistance of the back running down the front of the uterus on one or other side of the middle line. Secondly, the small parts of the foetus are palpable with ease on both sides of the middle line. Thirdly, the trunk of the child may be felt well round to one or other flank, usually the right. Fourthly, the foetal heart is best heard well round to the flank, but may sometimes be heard also anteriorly on the opposite side of the abdomen. This last is a point of importance, as it indicates that the child is lying with its spine straightened and its chest thrown forwards, and this implies a degree of undoing of the flexion of the head.

Owing to the difficulty which the head, especially if incompletely flexed, may have in entering the brim of the pelvis, it tends to remain movable above the brim, even in a primigravida, until the commencement of labour. Failure of the head to engage in the brim of the pelvis at least a fortnight before labour in a primigravid woman should always make one think hard, and lead, if necessary, to revision of the pelvic measurements; but if these are quite satisfactory, then the posterior position of the head is enough to account for the failure to engage. Up to about five or six weeks before full time the child may quite readily change its position spontaneously, and come to lie occipito-anterior; but it rarely changes within the last fortnight, indeed comparatively seldom within the last month, and I think that cases of occipito-posterior position diagnosed in the later weeks should be treated by an effort to correct the position.

The only method that I know which affords any prospect of success is the one described by Dr. R. C. Buist of Dundee. The patient is asked to come back, bringing with her two pillow-slips and a bolster-slip. One pillow-slip is folded into a firm cylindrical pad or roller, which is then placed on the right flank (I am assuming a right occipito-posterior position in this case), in order to press the anterior shoulder of the child towards the middle line. The other pillow-slip is folded in four and placed as a firm pad on the left side of the lower abdomen to press back the limbs of the child, while the bolster-slip is fixed as a firm abdominal binder to keep the pads in position. The patient is then told to go home, to rest as much as possible during the next forty-eight hours, and to take a dose of castor-oil the morning after the pads have been applied. In a series of close upon a hundred cases, regarding which careful notes were taken in our ante-natal department, Haultain[1] found that the occiput rotated to the front in rather over 80 per cent. Once it has come round to the front the head tends to engage, especially if a firm binder be kept in position to press it into the pelvis, and relapse cannot occur. After the head has begun to engage with the occiput posterior, any attempt to rotate it by means of pads is, of course, useless, and the first stage of labour must be allowed to complete itself before any question of intervention arises.

During labour the diagnosis can again be made by the abdominal method, but an aseptic vaginal examination will further confirm it. The main point here is the recognition of the anterior fontanelle lying to the front, and it is important to try to feel also the posterior fontanelle, usually pretty high up in one or other posterior quadrant of the pelvis, and to attempt to assess the relative levels of the two fontanelles. This gives one an idea of the degree of flexion of the head. If, at the end of the first stage, there is still any doubt as to the exact position of the head, the point can be settled beyond all question by feeling the ear of the child. The one or two fingers which are sufficient to make the vaginal examination in a normal case are quite inadequate in an abnormal case. The secret of correct diagnosis in all cases of difficult labour is

"chloroform and the whole hand." Under anaesthesia, and with aseptic precautions, the hand is slipped up the side of the head until the ear is felt, and when it is flattened out on the head, the pinna points towards the occiput. The importance of this method of diagnosis is very great, because, as I have already indicated, so many disasters result from allowing the case to drift on without the attendant having an accurate knowledge of the position of the head, and therefore of the real cause of the delay.

Difficulties are likely to be encountered only where the head is imperfectly flexed; if, therefore, we can at a comparatively early stage recognize that we are dealing not merely with an occipito-posterior presentation, but with an imperfectly flexed head, then we are in a position to consider whether or not early intervention is advisable. Signs which point significantly to imperfect flexion are, first, delay in the engagement of the head; secondly, sausage-shaped membranes; thirdly, rupture of the membranes early in the first stage; fourthly, ability to hear the foetal heart through the chest of the child; and fifthly, the anterior fontanelle lying on a lower level than the posterior, as felt by vaginal examination. Look at this table, based upon an analysis by Miller[2] of over 750 cases of occipito-posterior positions in our hospital work in Edinburgh.

Signs of Imperfect Flexion.	No. of Cases in which Noted.	Termination.	
		Malrotation or Non-rotation.	Spontaneous Forward Rotation.
Early rupture of membranes ...	197	145 (74 %)	52 (26 %)
Delayed engagement of head ...	139	107 (77 %)	32 (23 %)
Foetal heart heard anteriorly as well as in flank	103	78 (76 %)	25 (24 %)
Two or more of above signs noted	141	81 %	19 %
Normal engagement, and rupture of membranes near full dilatation of os. Heart not heard in front	332	33 (10 %)	299 (90 %)

The moral to be drawn from this table is that if we can definitely recognize a lack of complete flexion from the presence of two or more indications we may justifiably and advantageously intervene early, in the interests of both mother and child; experience tends to show that when intervention has to be undertaken late in labour both patients are more exhausted, and the actual intervention itself is more difficult.

Management.

I am no advocate of unnecessary intervention in labour—very much the contrary, indeed. In the great majority of occipito-posterior cases the occiput will rotate to the front, if given sufficient time; it is only where one has definite evidence that in a given case the head is so deflexed that it will probably not rotate spontaneously to the front that I think one should intervene early. Such cases will probably form only from 10 to 20 per cent. of all occipito-posterior presentations. The method of intervention indicated is manual rotation, and with the head at the brim this is an easy operation. It is important to visualize exactly what we propose to do before the hand is introduced, just as in a case of internal version. Without this precaution, we may find ourselves attempting the operation in a strained attitude or with the hand which is obviously less convenient than the other hand would have been. It is important to try also to rotate the body of the child by external manipulation, and this can be helped in many cases by grasping the anterior shoulder between the tips of the first and second fingers *in utero*, while the palm of the hand is spread over the side of the child's head, and actually produces rotation of the head. Some authors have, I think, exaggerated the risk of rotating the child's head without the rotation of the shoulders. The child's neck is capable of rotation without injury to an extent considerably beyond the capacity of the adult, and I have again and again rotated the head without succeeding in rotating the body, and the child has been in no way affected. At the same time, it is certainly desirable to make every effort to rotate the shoulders, and there is a greater likelihood of the head going back to its original position if the shoulders are not turned.

When we come to the question of the arrest of the head on the floor of the pelvis we have to decide whether to attempt to rotate or to deliver by forceps as a face to pubes case. I confess that I very much prefer rotation to forcible delivery face to pubes; indeed, I think that to deliver a child of normal size as a face to pubes case should be regarded either as a failure in diagnosis or as a confession of failure in efforts to rotate. It is the most undesirable method of all, because it inevitably necessitates undue force and laceration. With regard to the methods of rotation, manual rotation is much safer than forceps rotation. Rotation of the head in the cavity is not, as a rule, a difficult matter. All that is required is that the head should be gently pressed back a little so as to undo any actual impaction; flexed, if possible, so as to throw smaller diameters across the pelvis; and then, if the side of the hand is spread out over the side of the head, a mere movement of rotation of the hand will produce a corresponding rotation of the head. As before, a similar effort should be made to rotate the shoulders by external manipulation through the abdominal wall. Lastly, in this connexion, we must not forget that, although the position is unquestionably the rarest of all, yet the left occipito-posterior position does exist. Therefore, if difficulty is found in trying to rotate the occiput round the right side of the pelvis, an effort should be made to rotate it round the left side before giving up manual rotation as impracticable. Should manual rotation fail, then forceps rotation, provided great care is used to avoid injury to the maternal soft passages as well as to the child's head, is a useful method of treatment. One of the secrets of success is to sweep the handle of the forceps gently and slowly round the arc of a considerable circle, so as to reduce to a minimum the movement of the blades inside the pelvis.

Where rotation has been effected by hand, the head should be well pressed down on to the floor of the pelvis by fundal pressure, and the remainder of the labour either left to nature or shortened by forceps, as circumstances indicate. When the head has been rotated by forceps, then I think that the rest of the delivery should also be conducted instrumentally by the rapid reapplication of the instruments with the blades in their proper position.

In cases where the delivery, for one reason or another, is being conducted face to pubes, and where considerable tearing is likely, I strongly advocate the deliberate incision of the perineum—that is to say, an operation of episiotomy. Personally I prefer to make this incision in a postero-lateral direction, so that any extension of the incision will avoid involvement of the anal sphincter. The subsequent stitching of a clean cut like this is very much easier, and the anatomical restoration of the parts simpler than in an irregular laceration, while the additional room which it gives shortens very materially the later part of the delivery.

BREECH PRESENTATIONS.

The next most common cause of difficult labour is, I think, breech delivery, and an analysis of the complications and difficulties which we have met in recent hospital experience of 233 breech deliveries in three years clearly indicates that the main causes of trouble are the impaction of the breech, especially in cases of frank breech, and, secondly, arrest of the after-coming head, due either to imperfectly dilated passages or to some undoing of the flexion of the head by pulling on the limbs. In these 233 cases we had 8 maternal deaths, but in only one could death be attributed even indirectly to the nature of the labour—a death from septicaemia following impaction at the brim. All the other 7 cases were very seriously complicated by eclampsia (2), concealed accidental haemorrhage (2), acute rheumatic fever, acute pulmonary oedema, and grave cardiac disease with heart failure. The foetal mortality (78) in these 233 cases varied from 3 per cent. in one year to 18 per cent. in another, after complications such as placenta praevia, contracted pelvis, accidental haemorrhage, extreme prematurity, etc., had been deducted.

I am not able to explain the great difference in different years. It may just be a matter of good or bad fortune, but it is quite possible that it is an indication of the skill of the house-surgeon at the time, because it is a well-known fact that the foetal mortality in breech cases depends in considerable measure upon the knowledge, skill, and presence of mind of the obstetrician.

The greatly increased difficulty and danger, especially to the child, in a breech case in a primigravida is so well recognized that we invariably make an effort to correct this malpresentation where it is met with in such patients in the ante-natal department. During the three years in which we dealt with these 233 cases there were to our knowledge an additional 44 cases so averted by external version.

Management of Breech Labour.

With regard to the general management of breech labour I have nothing to say that is in any sense new, but some points in the old and sound teaching may bear repetition. Masterly inactivity in the early stages is unquestionably the keynote of success. My old master, Sir Halliday Croom, used to sum it up in the words, "Hands off the breech," and this certainly may be said to summarize the whole management of a normal breech case up to the birth of the lower limbs. Frank breech cases always tend to give more trouble than those in which the attitude of the child is one of complete flexion. The extended legs act as splints to the trunk and prevent the lateral flexion of the trunk, which is an essential feature in the descent of the breech through the pelvic outlet. Impaction of the breech is therefore very liable to occur when it reaches the pelvic floor, and artificial assistance is often needed. This usually takes the form of bringing down one or sometimes both legs, and the fact that this diminishes the bulk of the breech as it passes through the outlet of the vagina, and that the soft passages are therefore not so completely dilated as they would otherwise have been, leads not infrequently to subsequent difficulty in the birth of the head.

In the 233 breech cases we had 21 cases of frank breech. Artificial assistance of one sort or another was required in 20 of these—that is, in over 95 per cent. The assistance took the form, in most instances, of extraction of the breech after bringing down a leg, and in 7 of these cases an episiotomy was performed in order to give more room for manipulation. No maternal deaths occurred, but 7 stillbirths—that is to say, a foetal mortality of 33 per cent. in this particular set of cases. The cause of death was cerebral haemorrhage in 4 instances, and asphyxia in 2, while one child was dead *in utero* on admission of the mother to hospital.

Treatment of Impaction.

This leads me to speak briefly of the treatment of impaction. If it occurs at the brim, the cause is almost always either the mere bulk of the breech or a contracted pelvis; if it occurs when the breech has reached the pelvic floor, the cause is usually a frank breech. With the breech at the brim, the treatment is to push the breech gently out of the pelvis and to bring down one foot, the foot lying anteriorly by preference. Unless there are definite indications for the rapid completion of the labour it is much safer for both patients to leave Nature to drive the half-breech slowly through the pelvis rather than to proceed immediately to the extraction of the child. To overcome the impaction is usually all that is needed, and intervention at this stage should preferably stop there.

When the impaction occurs at the pelvic floor—due usually to a frank breech—an attempt may be made to hook down the breech by passing the finger into the groin. The breech hook should be used only if the child is dead. No great degree of force can be exercised by the finger or fingers in the groin, and, if we fail, we may sometimes succeed in extraction by the use of forceps; but the grip is not a very satisfactory one, and I do not regard the breech as at all a good indication for the use of forceps. I believe that better results follow if, with the patient in the Sims position, the breech is gently pressed back to the brim and one foot is brought down as before. The risk of doing this is undue stretching of the lower uterine segment, but if the patient is deeply anaesthetized, and if the manipulation is gently and slowly done, the risk is not great.

When intervention is required for the extraction of the after-coming head or for the bringing down of a displaced arm, the great danger is that the obstetrician may become flurried. It is perfectly true that there is no time to lose, but it is equally true that "the more hurry, the less speed." To be successful the intervention must be carried through exactly according to the book. I say this because, to the man who is anxious and flurried, and who dreads that he is going to have a stillbirth, the temptation to pull, in the hope that with a little extra force he will be able to extract the head, although it may be partially extended, or although one arm or even two may be displaced alongside it, is almost irresistible. The sooner that man realizes that in such an effort he is wasting valuable time and endangering the child's life, and that there is no road to success except the high road, the better for his obstetric practice. Two other small points in this connexion are: first, that no attempt to bring down an arm should be made until the trunk is born as far as the scapula—in other words, the arm must be brought well into the cavity of the pelvis and within reach, otherwise the attempt to get it down will fail; secondly, that in a case where intervention is hindered by a tense perineum, and in all cases of a primigravid breech labour, an episiotomy ought to be made, because the additional room which it gives is an enormous advantage in the necessary manipulations, and in the subsequent birth of the head.

Lastly, the Prague seizure is generally to be condemned as a crude and somewhat brutal method of extraction, in which one has little control over the force exerted. It is not comparable in efficacy with the Mauriceau-Smellie grip with the child astride the forearm and two fingers placed well back over its tongue. The essence of the manœuvre is to produce flexion of the head simultaneously with the extraction, and this can unquestionably be best brought about by the fingers on the tongue pulling down the face, while the occiput is forcibly lifted up against the symphysis pubis in the movement of extraction.

The After-coming Head.

The application of forceps to the after-coming head is a method of treatment which is more ignored than it deserves to be. If the forceps are sterilized and ready, it does not take more than a few moments to apply them to the after-coming head with the trunk and limbs of the child swung well forward and out of the way by an assistant; and there is no question that the forceps give a degree of control over the movements of the head which is greater than that obtained even in the Mauriceau-Smellie manœuvre, while the application of the force to the head and not to the neck is probably safer for the child. I always like to have forceps ready in a breech delivery, and I have found them a most satisfactory means of delivering the after-coming head. Herman described it, without qualification, as "the best treatment where help is needed in the delivery of the after-coming head."

From the figures I have already quoted with regard to stillbirths in frank breech cases, it will be seen that cerebral haemorrhage is one of the commonest causes of death. This exceedingly important observation is based on the incontrovertible evidence of a large series of post-mortem examinations. The haemorrhage is due in most cases to tears in the ligaments of the brain, the falx cerebri, and, in breech cases especially, the tentorium cerebelli, and the injury to these structures is unquestionably due to the fact that in the rapid extraction of the after-coming head the skull is exposed to rapid changes of shape, putting a sudden strain upon its internal structures which they are incapable of sustaining. In a head-first labour the slow moulding of the head allows very considerable changes in the shape of the head to occur without corresponding damage, but this is simply because the moulding forces are applied so slowly. As showing the frequency of these intracranial injuries Holland, in an examination of the bodies of 16 infants delivered by the breech, found such injuries in no fewer than 14, while Heidler, in a recent examination of 99 cases of stillborn breech deliveries, found tears of the tentorium in 68; in

11 he found death to be due to asphyxia, while in the remaining 20 cases the skull was not dissected, so that no actual diagnosis was made. Browne, on the basis of an examination of 200 stillbirths in the Edinburgh Maternity Hospital, showed that cerebral haemorrhage was ten times more common in breech than in vertex cases.

The moral to be drawn from these observations is that intracranial injuries resulting from the rapid extraction of the after-coming head are a considerably greater source of danger to the child than is asphyxia from delay in the birth of the head. It is generally accepted that the foetus can exist for at least ten minutes without receiving fresh supplies of oxygen. Bourne, in his valuable little book, *Recent Advances in Obstetrics and Gynaecology*, refers in this connexion to the apnoeic condition of children born after a prolonged period of "twilight sleep," and who, if left severely alone but merely kept warm, remain motionless for perhaps ten minutes or a quarter of an hour while the heart beats quite regularly, and then quietly and gradually establish respiratory movements. As one who uses "twilight sleep" to a large extent, I have had a great many instances of this, and I can confirm it absolutely. But the application of the matter at present is that it emphasizes the need for care and deliberation in the extraction of the head, and the danger of "hurry."

White Asphyxia.

Many of you will have read recently in the *British Medical Journal* a short correspondence which followed a letter by Mr. Bourne in regard to the pallid form of asphyxia—and that is usually the only serious form. With the main burden of Mr. Bourne's letter I am in entire agreement. There is far too much done in the way of violent efforts at resuscitation of the asphyxiated child, and there is no question in my own mind that in many cases the child who is in this condition of suspended animation actually has the flickering spark of life extinguished by these misguided efforts. Clearing out the mucus and liquor amnii from the throat by means of a soft rubber suction tube, warmth to the surface of the body, and a little old brandy on the gums and palate, and in severe cases the intramuscular injection of one or two minims of pituitary extract, have in my experience proved most successful. The main general point to remember is, however, that infants who pass into a condition of white asphyxia are suffering from a condition akin to shock, and should be treated along appropriate lines, warmth and extreme gentleness of handling being the essentials.

References.

[1] Haultain: *Trans. Edin. Obstet. Soc.*, lxxxv, 1925-26. [2] Miller: Ibid., lxxxvi, 1926-27.

THE TREATMENT OF EXOPHTHALMIC GOITRE

BY

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THE controversy which centres around the treatment of exophthalmic goitre is largely due to the fact that patients may get better without treatment. These recoveries are too often attributed to some particular line of treatment, which is then hailed as having the power to effect a cure in a substantial percentage of cases; thus numerous procedures have been advocated, all of which were said to produce good results. Until recently the physician alone showed any interest in the disease, and in his treatment he often adopted a rather fatalistic outlook. He insisted on the removal of all septic foci, advocated a diet in which meat was restricted, advised rest, prescribed sedatives, and if the case was not improved then, the disease had to be left to Nature. Serums, vaccines, and numerous lines of treatment have all been tried, but to-day the most popular remedies are (1) rest combined with iodine, (2) *x*-ray therapy, (3) operative procedures.

In this paper an attempt is made to compare the results obtained from these three lines of treatment, and in diagnosis, and in estimating improvement or otherwise, I have relied on the basal metabolic rate, the pulse, and the weight; the element of personal bias is thus eliminated and the results are probably rendered more acceptable. In calculating the basal metabolic rate the Douglas bag and Haldane gas analysis apparatus have been used exclusively.

In deciding whether a patient has exophthalmic goitre or not the view is adopted that there must be in every case an increased basal metabolic rate in addition to the usual signs and symptoms. There is a small group of women between the ages of 40 and 45 who show some signs and symptoms of exophthalmic goitre but in whom the basal metabolic rate is not increased; these are therefore not included in my cases. Cases of toxic adenoma are also omitted.

Treatment with Iodine.

The possibilities which treatment with iodine held out were first appreciated by Marine and Lenhart[1] when they found that the goitre in Graves's disease contained less than the normal amount of iodine. Ten years later Neisser gave small doses of iodides to patients, and reported good results. These results were supported by the observations of Beebe,[3] using small doses of iodine, and by Loewy and Zondek,[4] who prescribed 3 drops of a 5 per cent. solution of potassium iodide. This they increased to 20 drops three times a day so long as the weight continued to increase.

We owe most of our knowledge to Plummer,[5] who reported the results of 43 cases in which Lugol's iodine was used; he found that 95 per cent. were benefited. He stated that the basal metabolic rate was considerably reduced, though only temporarily, in most of his cases in about ten days; this was confirmed by Cowell and Mellanby[6] in this country.

I have observed the effects of iodine in 36 cases, paying special attention to the basal metabolic rate, pulse, and weight. No case is included in which the basal metabolic rate was under +30 per cent., while in the most severe case there was a basal metabolic rate of +114 per cent. In 31 of these cases iodine was being given for the first time, and the drug prescribed was usually Lugol's iodine in doses of 20 to 30 minims a day. In 8 cases the basal metabolic rate and pulse rate were reduced to within normal limits; in 18 other cases there was marked improvement, but the basal metabolic rate and pulse were still raised. In 4 cases there was little or no effect, while in one case the patient became definitely worse, the basal metabolic rate and pulse rate rising from +32 per cent. and 100 to +53 per cent. and 128 respectively. Thus improvement followed the administration of iodine in 84 per cent. of cases. In mild cases with a basal metabolic rate of +20 to +25 per cent. the improvement which followed iodine administration was slight, and it was often difficult to say whether it was the relaxation from mental worry or the iodine which caused the improvement.

In 16 cases the effects of a second course of iodine were observed; these include 11 cases from the first group, on whom the results of a first course of iodine have already been noted. The interval which elapsed between the first and the second course in these 16 cases was variable, and appeared to influence the subsequent action of the drug—the longer the interval the more likely is it that the drug will act a second time; but this is by no means invariable. The length of time that the drug was continued on the first occasion also seems to be important; the longer the course the longer the interval before the drug will act a second time. If the course is a short one there is every likelihood of the drug acting a second time.

The lowest basal metabolic rate among these 16 cases was +33 per cent., while the highest was +75 per cent. In 6 cases the basal metabolic rate and pulse fell considerably at the end of ten days, and the improvement was quite comparable to the result of a first administration of iodine. In 5 cases the improvement was slight, but poor compared to the results of a first course. Three patients died within a month; they were very ill, however, when the iodine was given, and it is not thought that it hastened their deaths. In 2 cases the patients became definitely worse, the basal metabolic rate rising and the weight falling, but in one of these iodine had been of little value at its administration.

TABLE I.—*Results on the Basal Metabolic Rate of a Second Course of Iodine.*

No.	First Course.		Interval.	Second Course.	
	Before.	After.		Before.	After.
	Per cent.	Per cent.		Per cent.	Per cent.
1	+60	+29	5 months	+39	+13
2	—	—	4 months	+35	+15
3	+46	+27	10 weeks	+53	+14
4	+60	+19	7 months	+59	+15
5	+71	+44	3 weeks	+75	+47
6	+59	+13	3 weeks	+61	+31
7	+70	+28	3 weeks	+39	+26
8	—	—	1 year	+58	+44
9	+114	+56	6 weeks	+75	+65
10	+65	+31	4 weeks	+50	+40
11	—	—	1 year	+33	+26
12	+72	+42	9 months	+70	Died
13	—	—	6 months	+54	Died
14	+60	+40	1 month	+72	Died
15	—	—	1¼ years	+55	+70
16	+52	+48	3 weeks	+54	+61

From these figures it is seen that in only 37 per cent. of cases was a second course equal to a first. In all cases in which improvement was noted the maximum fall in the basal metabolic rate and pulse rate occurred in ten to fourteen days; in only one instance did the basal metabolic rate fall to any marked extent after the fourteenth day.

Cowell and Mellanby,[6] using small doses of potassium iodide, noted that the fall of the basal metabolic rate occurred in ten to twenty days, while Cole[7] says it occurs in two to three weeks.

It has been shown by most writers that improvement is merely temporary, that eventually there is a gradual exacerbation of symptoms with a coincident rise in the basal metabolic rate and pulse rate, and that this period of improvement depends largely, if not entirely, on whether the patient is exposed to worry or not. If the patient is kept away from the anxieties which attend home life or is treated in an institution, the basal metabolic rate may begin to rise again after two weeks and then gradually increase in height until it reaches the level prior to the administration of iodine. On the other hand, in some patients it may show no tendency to increase for four or five weeks, and in others eight weeks may elapse without any rise, but as soon as such a patient is sent home from hospital the basal metabolic rate returns to the original height.

I will quote three cases to illustrate these points and to emphasize that relapse ensues as soon as the patient begins to worry or is sent home.

1. A married woman, aged 30, was admitted to hospital; after she had rested in bed for a week the basal metabolic rate was +72 per cent. and the pulse usually about 120. She was given Lugol's iodine, and ten days later the basal metabolic rate was +28 per cent. and the pulse 92. Fourteen days later a rise to +45 per cent. was noted, while when a further nineteen days had elapsed it had risen to +57 per cent. and the pulse was then about 110.

2. A patient was given Lugol's iodine, and the basal metabolic rate fell to normal. It remained within normal limits for three weeks, at which time she received news that her child was not well. The basal metabolic rate rose the next week to +57 per cent., and consideration for her health forced us to send her home.

3. A patient was admitted to hospital, and after seven days' rest in bed the basal metabolic rate was +70 per cent. and the pulse 115. She was given Lugol's iodine, and ten days later the basal metabolic rate was +47 per cent. and the pulse 100. The basal metabolic rate varied between +44 and +53 per cent. for seven weeks, and she was then sent home, iodine treatment still continuing. Five weeks later she was readmitted, and the basal metabolic rate was +75 per cent. and the pulse 130.

If a patient has been given iodine and the basal metabolic rate and pulse rate have been lowered, the stopping of the iodine is followed by an immediate relapse. If the basal metabolic rate and pulse have been lowered, and after perhaps five weeks have risen slightly, but not to anything like the previous height, the withdrawal of the iodine still results in a relapse. In both cases the basal metabolic rate rises to the original level before iodine was given. On the other hand, in cases where iodine has been given, and the basal metabolic rate and pulse have gradually relapsed to their levels before iodine was administered, stopping the drug now appears to have no effect whatever; further, the patient does not appear to improve as the result of stopping the drug. I have frequently ceased to give a patient iodine after she has been on it continuously for six months, and the basal metabolic rate and pulse have not been influenced for better or for worse. On the other hand, Fraser[8] considers that 6 minims of 10 per cent. tincture of iodine may do harm if continued over a long period. Several French physicians, however, give larger doses than is customary in this country over a longer period, and claim that they obtain better results.

As shown above, in only 6 out of 16 cases was the response to a second course of iodine satisfactory. This means that in 10 cases, were an operation contemplated, the patient would not be able to have the beneficial effect of iodine as a preparation for the operation.

An example of this is that of a girl, aged 19, who was admitted to hospital with a basal metabolic rate of +59 per cent. and a pulse of 120. She was given Lugol's iodine, and ten days later the basal metabolic rate was +13 per cent. and the pulse 84. She refused operation and went home, but ten weeks later she was readmitted with a basal metabolic rate of +65 per cent. and a pulse of 125. During seven of these ten weeks she had been having iodine. On admission, Lugol's iodine, 10 minims three times a day, was prescribed, but the basal metabolic rate and pulse never fell below +60 per cent. and 120 respectively; the dose was then increased further, and the basal metabolic rate fell to +31 per cent., but no further.

The seriousness of such a state of affairs was emphasized by Goetsch.[9] In such a case, if an operation is undertaken, the risk is considerable, while had operation been performed when the patient was first given iodine the risk would have been far less. As it is held by most authorities that iodine by itself cannot cure exophthalmic goitre it seems only fair to the patient that iodine should be held back until an operation is decided upon, since its value in preparing patients for operation is well recognized, and is reflected in the improved mortality rates in published cases.

Iodine is an excellent remedy for the crisis with vomiting with which many patients are troubled, but if a course has already been given its value at such a time may be disappointing. On five occasions I have seen cases where a course of iodine has been given for months and then stopped. Later, the patient has had a crisis with vomiting, and iodine was valueless in checking it. More often than not, however, the crisis can be controlled by giving iodine, whether the patient has had it before or not.

In prescribing iodine I have rarely given a larger dose than 30 minims of Lugol's iodine a day, as it is said that large doses cause an actual exacerbation of symptoms. Cowell and Mellanby[6] found that improvement followed minute doses of potassium iodide, such as 2 or 3 grains a day, and they do not think that large doses are necessary. After the maximum reductions in the basal metabolic rate and pulse rate have been apparently reached an increase in the amount of iodine reduced the basal metabolic rate and pulse rate still further in 3 cases. These patients had had iodine for several weeks; in 2 cases the basal metabolic rate and pulse rate had returned to the levels before iodine was given, while in one case, already mentioned, it had had little or no effect. It was decided to operate on them, and the dose of Lugol's iodine was increased from 20 minims a day up to 40 minims. In the first case the basal metabolic rate fell from +65 to +31 per cent., in the second case from +34 per cent. to within normal limits, and in the third from +75 to +40 per cent. The first two patients were operated upon at once, but in the third the mistake was made of increasing the dose to 50 minims, and in spite of this, or because of it, the basal metabolic rate rose within a week to +63 per cent.

A striking fact which is noticed during iodine administration is the patient's increase in weight. This increase

TABLE II.—*Results of X-Ray Therapy.*

	Case 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Before treatment.	+79% 98 101	+78% 120 123	+50% 114 128	+57% 110 112	+63% 104 116	+43% 116 96	+40% 120 107	+65% 108 117	+37% 114 93	+52% 12[illegible] 125	+30% 100 102	+5[illegible]% 106 112	+50[illegible] 94 104	+40% 90 108	+30% 90 110	+60% 120 91	+48% 105 95	+36% 1.0 120	+33% 89 126	+55 1.4 137	+70% 118 77	+30% 100 1 1	+58% 150 85
After 1 mth.		+62% 110 134				+70% 114 100	+49% 121 107			+54% 100 123	+2[illegible]% 90 106	+47% 100 105							+57% 101 125	+70 128 131	+57% 92 102		+62% 110 82
2 mths.		+49% 100 135	+33% 102 126			0% 90 116						+52% 105 112	+45% 90 110		+21% 90 109				†	†		+42% 121 105	+83% 1 0 91
3 mths.	+76% 12[illegible] 103		+31% 94 127	+25% 92 112			+18% 90 114							+51% 100 99		+72% 125 92	+38% 100 101						
4 mths.		−9% 70 128		+31% 90 120						+28% 86 133	+22% 82 107			*		*		+33% 100 —				+35% 110 112	
5 mths.	+[illegible]0% 90 107				+8% 86 129			+32% 110 120	+25% 118 91			+47% 105 112									+ 2% 120 105	+8% 92 125	+73% 100 92
6 mths.	+38% 104 108						+24% 92 114				+23% 80 107	+37% 90 120	+61% 90 107										
7 mths.										+9% 80 132												+20% 93 128	+56% 124 89
8 mths.			Normal 80 134	+29% 94 120																	+61% 106 106		
9 mths.	+5% 85 110	Normal 70 130		+18% 86 116	+7% 84 126			+40% 86 123	+10% 112 92	+35% 80 131		+35% 86 122	+32% 86 113		+15% 75 116		+25% 8[illegible] 101	+10% 91 120			‡	+50% 140 —	
10 mths.								+30% 84 123														Died	
11 mths.				+21% 88 117															•				+72% 150 84
12 mths.			+4% 72 145	+10% 80 117	+2% 75 127	+5% 80 118		+16% 84 127	+19% 100 92	+30% 86 134		+33% 84 125	+46% 95 111		+30% 100 112		+35% 85 96	+40% 104 115					Died

* Insisted on operative treatment. † Refused further treatment. ‡ Operation considered advisable.

will often continue when the basal metabolic rate and pulse rate are rising. Thus, a patient weighing 5 st. 7 lb. was admitted with a basal metabolic rate of +70 per cent.; she was given iodine, and ten days later the basal metabolic rate was +28 per cent. and the weight was 5 st. 12 lb. Six weeks later the basal metabolic rate was +57 per cent., but the weight had increased to 7 st. 3 lb.—an increase of 19 lb. while the basal metabolic rate was rising from +28 to +57 per cent.

TREATMENT BY *X* RAYS.

The treatment by *x* rays is probably the most widely adopted to-day, and its chief merit lies in the fact that there is no mortality rate, although patients may die during the course of treatment as the result of the disease itself. *X*-ray burns, which a few years ago were only too common, are now rarely seen, and, indeed, the only cases seen recently are of patients who received treatment some years ago. It is probably no more frequent than injury to the recurrent laryngeal nerve during thyroidectomy.

The question whether *x*-ray therapy is of any value was discussed at the British Medical Association Meeting at Edinburgh in 1927, and most of the speakers were rather sceptical. Walton[10] recently said he did not think it was of much value, but there are many who have great faith in it, and some who make extravagant claims for its value. Little has been published in this country on *x*-ray therapy, but Hayes[11] found there was improvement in 76 out of 100 patients treated by him. Unfortunately no basal metabolic rates were given, and one has to rely on his judgement. Sanger[12] obtained good results in 41 out of 50 cases, and his results are adequately supported by basal metabolic rate estimations on all the patients. Borak[13] stated that 80 per cent. of patients improve, while 33 per cent. become free of symptoms.

There can be little doubt, therefore, that *x*-ray therapy is a valuable line of treatment in some cases. The time required to produce results is doubtful; some say one to four months, while Murray[14] states that it may take as long as two years.

I have been able to collect 23 cases in which I had examined the patients before the commencement of *x*-ray therapy, repeatedly during the course of treatment, and, finally, at the end of a year or at the termination of their treatment. Since it is undoubtedly a fact that various factors, such as excitement, influence the basal metabolic rate, great care has been taken in arriving at an accurate result, and in my cases the basal metabolic rate given is the mean of several estimations.

All the patients had well-marked signs and symptoms of exophthalmic goitre, and it will be seen that no patient had a basal metabolic rate of less than +30 per cent. at the commencement of treatment. A number of other patients were treated, but they would not come into hospital for a basal metabolic rate estimation, and so are not included. Some very mild cases with basal metabolic rates of around +20 per cent. were also treated, but in many of these it was not considered absolutely certain that they were not simple cases of neurasthenia.

The actual method of treatment is as follows:

Coil and Coolidge tube. Kilovoltage 90. Current 3 milliamperes. Filter 3 mm. aluminium *plus* two layers of felt. Dosage measured with Sabouraud pastilles, and a dose equal to half tint B (with filter in place) is given. This equals with apparatus in use a quarter of an erythema dose. Treatments are given at first twice a week, then once a week, and the intervals are gradually lengthened until a total of about thirty doses has been given, spread over a year. The interval between the doses and the total number of doses given depends on the progress of the patient.

In Table II, showing *x*-ray results, the details are given in the following order: (1) basal metabolic rate, (2) pulse rate, (3) weight in pounds.

In 6 of these 23 cases it will be seen that the basal metabolic rate has returned to within normal limits, and the pulse rate is between 70 and 85 beats per minute. The weight has increased in each case, the smallest increase

being 5 lb. and the biggest being 20 lb., while the average increase is 11 lb. In 6 cases there has been improvement, and in 5 of these the improvement was marked. The basal metabolic rate has fallen considerably in each instance, but not to within normal limits, while there has been an average increase in weight of 6 lb.

In 9 cases there was no improvement worth recording; in 5 of these the patients were emphatic that they felt no better, and either clamoured for an operation or refused further treatment. The other 4 cases showed no improvement whatever. Records for one year's treatment are given, while actually they have been treated for sixteen months and no improvement has been noted; it is not thought there is any likelihood of further change. Two deaths occurred, and it will be seen that one patient died after being treated for ten months and the other after receiving treatment for twelve months.

The time required for cure or improvement has now to be considered. It will be seen that among the cured cases the average duration of treatment necessary to bring the basal metabolic rate and pulse within normal limits is six and a half months, but it may occur as early as at the end of two months or as late as twelve months.

Among the cases classified as improved, the improvement was obvious in most cases by the third month, and in all cases by the sixth month. It seems fair, therefore, to assume that if benefit is likely to be derived from *x* rays, improvement will be noted in six months, whereas if there is no amelioration of symptoms during this period it is doubtful if further *x*-ray therapy will be of much value. The cases which responded most satisfactorily to *x*-ray therapy were those in which the signs and symptoms were of short duration, the size of the goitre being of less importance. Cases of longer duration in which the goitre was moderately enlarged and firm often improved, but were very seldom cured. The longer the disease has existed the less hope is there of benefit being derived from *x*-ray therapy.

Operative Treatment.

The third line of treatment is surgical; before giving the results it is desirable to describe briefly the procedure in each case. The patient was put to bed, and after she had rested for three days the basal metabolic rate was estimated; this was repeated until a consistent result was obtained, since frequently the second estimation is lower than the first, but the third is usually the same as the second. This is because on the first occasion the apparatus is apt to frighten the patient, and this in itself is sufficient to give an inaccurate result.

The patient was next given Lugol's iodine, 10 minims three times a day, and at the end of ten days one or more basal metabolic rate estimations were made; the patient had an electro-cardiograph taken, particular attention being paid to the inversion of T in lead II, and less attention paid to an inversion in lead III. If the basal metabolic rate was +30 per cent. or under, the pulse rate under 95, and the electro-cardiograph gave no contraindication, the case was regarded as operable. More attention was paid to the basal metabolic rate than to the pulse or electro-cardiograph, though all three received attention. There was no undue haste in operating, as it was felt that nothing was lost by waiting up to three weeks, while the increased weight at the end of that period, and the fact that patients often felt better after three weeks than after two weeks, convinced me that something was to be gained by a short delay. After the operation, which was a complete one wherever the basal metabolic rate was under +30 per cent., iodine was continued for three days. It will be seen that some patients were operated on whose basal metabolic rate was higher than +30 per cent. In these patients medical treatment had been given a complete trial, and in each case it was felt that unless an operation was performed the patient was likely to be an invalid until an early death.

I have been able to collect 25 consecutive cases in which the basal metabolic rate was estimated before and after operation, and the fact that no deaths occurred was very gratifying. The object in giving a list of these cases is not only to emphasize the fact that care and discrimination can reduce the mortality rate, as the Mayo Clinic have done this, but, first, to compare the immediate results with the results after a year or longer, and, secondly, to compare these results with those of *x*-ray therapy. Since the introduction of basal metabolic rate estimations there have been no deaths in this hospital, and this contrasts strongly with a mortality rate of 15 per cent. in the 25 cases preceding.

TABLE III.—*Immediate Results of Operative Treatment.*

No.	Before Iodine.		After Iodine		After Operation.		Operation.
	B.M.R.	Pulse.	B.M.R.	Pulse.	B.M.R.	Pulse.	
	Per cent.		Per cent.		Per cent.		
1	+58	118	+33	93	− 9	79	Thyroidectomy.
2	+40	110	+23	90	+39	95	Thyroidectomy.
3	+34	96	+ 6	80	− 5	84	Thyroidectomy.
4	+61	110	+13	90	0	84	Thyroidectomy.
5	+38	91	+30	88	+ 8	80	Thyroidectomy.
6	+89	132	+58	120	+44	100	Lobectomy.
7	+64	110	+33	102	− 4	80	Thyroidectomy.
8	—	—	+15	85	−15	76	Thyroidectomy.
9	—	—	+14	90	− 7	72	Thyroidectomy
10	+111	135	+56	108	+39	96	Ligation.
11	+78	125	+65	115	+32	124	Sympathectomy.
12	+25	100	+27	95	0	76	Thyroidectomy.
13	—	—	+28	98	+ 5	84	Thyroidectomy.
14	+57	104	+26	88	+20	85	Thyroidectomy.
15	+60	116	+24	95	−10	70	Thyroidectomy.
16	+43	110	+14	90	+13	85	Thyroidectomy.
17	+57	116	+18	90	− 8	76	Thyroidectomy.
18	+65	112	+31	100	+17	84	Thyroidectomy.
19	+53	104	+14	84	− 3	80	Thyroidectomy.
20	+57	116	+18	90	− 8	80	Thyroidectomy.
21	+51	110	+36	96	+10	72	Thyroidectomy.
22	+39	96	+26	80	+18	70	Thyroidectomy.
23	+80	120	+40	100	+63	100	Lobectomy.
24	+38	100	+16	85	−11	80	Thyroidectomy.
25	+58	110	+12	85	0	75	Thyroidectomy.

The ligation and sympathectomy were performed on the same patient, and there can be no doubt that the patient was benefited by these operations. A basal metabolic rate estimation was made a year after the sympathectomy; the result was +26 per cent., and the pulse was 90. Of the remaining 23 patients 17 have been cured by the operation, while in 6 cases the basal metabolic rate is still above normal limits; 4 of these have been considerably improved by the operation, and indeed it was a surprise to find in 3 of them that the basal metabolic rate still persisted above normal limits. The remaining two patients were not relieved of their symptoms and signs, and I felt, entirely apart from the basal metabolic rate, that the patients were not benefited to any great extent. It is obvious that in order to justify any surgical procedure the results must be considerably better than non-surgical methods, and, comparing the surgical results given here with the *x*-ray results, I feel that the surgeon has proved his case. The figures published by surgeons never give the number of cases regarded as inoperable and sent for medical or *x*-ray therapy. While the average case treated by a radiologist is more severe than that treated by a surgeon, it must be admitted that in operable cases the results are excellent—so good that it might be better for patients if experienced surgeons temporarily forgot mortality rates and did their fair share in the treatment of the disease.

The next step was to examine patients who had been operated on a year or longer, and to compare these results with the immediate results of operation, and also with cases treated by *x*-ray therapy. It is always difficult to get patients who have been treated a year or longer to return for a couple of days to hospital in order to have a test made,

but 16 patients did so, and, as in previous examinations, the basal metabolic rate was estimated and a careful four-hourly pulse chart kept. The basal metabolic rate and the mean pulse collected from the charts show that these results are pleasing, but not quite so convincing as the immediate results. Four cases in which one lobe was removed are given, and in each the basal metabolic rate has remained above normal limits.

TABLE IV.

No.	Years since Operation.	B.M.R.	Pulse.	Operation.
		Per cent.		
1	1½	+ 3	80	Thyroidectomy.
2	2½	+40	99	Lobectomy.
3	1½	+10	80	Thyroidectomy.
4	1	+ 7	80	Thyroidectomy.
5	1½	+19	95	Thyroidectomy.
6	1	+25	95	Lobectomy.
7	5½	+ 8	70	Thyroidectomy.
8	2½	−12	80	Thyroidectomy.
9	1	+40	100	Lobectomy.
10	1	+15	84	Thyroidectomy.
11	1	+10	84	Thyroidectomy.
12	1	+12	80	Thyroidectomy.
13	1	+ 5	60	Thyroidectomy.
14	1	+27	90	Thyroidectomy.
15	1	+14	85	Thyroidectomy.
16	2	+60	95	Lobectomy.

In the cases shown it would appear that about 80 per cent. of patients operated on are cured or are considerably benefited by thyroidectomy, and these figures hold good for at least one year after operation. The best result that has been obtained from *x*-ray therapy is improvement or cure in 12 out of 23 cases—that is, 52 per cent.; if the surgeon's mortality rate is not above the average the difference of 28 per cent. between the surgical and the *x*-ray results certainly seems to justify surgery and to give it the premier place in the treatment of the disease. Many surgeons who do not operate frequently on exophthalmic goitres have a rather appalling mortality rate, and whereas one may advocate surgery for some cases, it cannot be too strongly emphasized that surgical intervention should only be undertaken by an experienced surgeon. In few diseases will care and discrimination in the preparation and selection of the cases be rewarded by more gratifying results.

There are many patients with Graves's disease who are improved or cured by *x*-ray therapy; in view of this it seems only fair that the radiologist should be given a chance before the case is sent to a surgeon. The patient ought to be treated for about six months by *x*-ray therapy, and if at the end of that time the basal metabolic rate, weight, and pulse have not improved, it is probably useless to continue.

SUMMARY.

An attempt is made to compare the results of treatment by medical measures, *x*-ray therapy, and operative procedures. Any improvement or failure to improve is supported by the basal metabolic rate, the pulse, and in many cases the weight.

I am able to support the view held by many that iodine causes only a temporary amelioration of symptoms and signs, and that prolonged iodine treatment is of no benefit to the patient. The stopping of iodine after it has been given for some months did not cause any change in the patient's condition, as judged by the basal metabolic rate and pulse. A second course of the drug does not give the uniformly good results of a first.

X-ray therapy is considered; it is found that in only 52 per cent. of cases does any material improvement result, and improvement will be obvious in six months from the start of treatment. Cases in which there is no improvement after six months of treatment should be referred to a surgeon for operative procedures.

Operative treatment is dealt with, and a list of cases is given showing the basal metabolic rate and pulse before and after operation; it is found that over 80 per cent. are cured or improved. Emphasis is laid on the fact that usually only patients in whom the basal metabolic rate was under + 30 per cent. and the pulse under 95 after iodine therapy were operated on. A second list is given showing the basal metabolic rate and pulse a year or longer after operation, and it is found that about 80 per cent. maintain their improvement. The fact is stressed that the most unsuccessful cases are those in which too little of the goitre is removed.

In conclusion, it is considered that iodine should be reserved until it is considered necessary to operate; that the patient should be given a six months' trial with *x*-ray therapy; then, if improvement does not occur, or if it is not reassuring, the patient should be sent to an experienced surgeon for operation if suitable.

I wish to thank the physicians, surgeons, and radiologists who allowed me to carry out these investigations on their patients.

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A NOTE ON NARCOLEPSY.

WITH REPORT OF A CASE.

BY

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THIS curious condition is characterized by paroxysmal attacks of sleep, frequently coming on during the day and often quite irresistible. Gélineau[1] apparently first described the condition in 1880, and very few cases had been recorded when, in 1923, Worster-Drought[2] directed attention to the subject by reading a paper before the Medical Section of the British Psychological Society, giving an account of three cases which had been under his care. Last year Kinnier Wilson[3] summarized the current knowledge of the various forms of narcolepsy and collected records of 43 cases from the literature. At the beginning of the present year (1929) Fulton and Bailey,[4] writing from the surgical clinic of Dr. Harvey Cushing, published an interesting contribution to the study of tumours in the region of the third ventricle, and discussed their diagnosis and relation to pathological sleep.

Attacks of sleep may, of course, be symptomatic of other definite pathological lesions, such as cerebral arteriosclerosis, dyspituitarism, suprasellar cysts, encephalitis lethargica, etc., but there is a group of cases which would appear to be "idiopathic" or "functional" in so far as no underlying organic disease has been discovered. Some of these "idiopathic" cases may have cataplectic attacks associated with the narcoleptic.

The patient whose case is now recorded was a motor car driver, who first came under my care about the beginning of November, 1928. He was then 26 years of age, and the narcolepsy was well marked. Symptoms had commenced about thirteen months previously, but it was not until four months after coming under observation that cataplectic attacks set in.

His sister, when about 23 years of age, had a "nervous breakdown," and was unable to follow her occupation as a clerk for about two years. During this period she had a constant feeling of fullness in her head, and was subject to attacks of hysteria, depression, and crying, but never had any sleepy attacks. In his own personal history there was nothing of note until he reached the age of 15 or 16 years, when he was off work for three months with a bad attack of "influenza." He seemed to have had no serious effects or sequelae of this illness, except that for some time after he suffered from "blueness" of the hands, suggesting to his doctor at that time a mild Raynaud phenomenon. Eventually, however, this condition disappeared, but later he began to have occasional "flushings" of the face, and these have troubled him from time to time since.

At the age of 22 he began to have occasional transient attacks of double vision, lasting five to ten minutes. At first, and for

a long time, he would only have an attack about once a month, but eventually they became a little more frequent. It was his custom during such an attack to close one eye so that he could drive straight. About three years later, when about 25 years of age, he began to suffer from a feeling of fullness and throbbing in the head, and it was just about this time that he first began to be troubled with attacks of drowsiness—a tendency to fall asleep—while driving the motor car. These sleepy attacks came on quite suddenly; he had no "aura" or warning, and although he never actually fell asleep while driving it was only by a very great effort of will that he was able to ward the sleep off. Usually he just dozed for a few seconds, and then his employer, sitting beside him, would rouse him by a nudge or shout, telling him to mind where he was going, as he would be driving zigzag. He had many a "narrow squeak." Sometimes when he felt an attack coming on he would make an excuse to his employer to stop the car, jump out, and look at the engine, as he found that by this manœuvre he could get a chance of waking up and so warding off the attack.

Occasionally, when an attack was threatening, his driving would be so erratic that he slowed down for a short time till he could ward it off. He always felt that if he did not "pull himself together" he would have gone right off to sleep. Sometimes, when he had to wait outside a shop for his employer, he would fall asleep completely, and once or twice he has fallen asleep while smoking, and the cigarette has dropped from his mouth and burned him.

The attacks at the outset always occurred when he was engaged driving the motor car, and naturally caused him great and constant anxiety. He carried on for another six months in spite of almost daily attacks, until one day he dozed off and nearly crashed into another car. He then realized that he would have to give up his occupation. That night, while shaving, and for no apparent reason, he "seemed to lose control of himself" and threw his razor and brush across the room. A few days later he was admitted into hospital under my care.

He appeared to be a bright, active man, and weighed 9 st. 9½ lb. He had rather an anxious expression, and was easily startled, any slight stimulus—for example, a noise—causing his limbs, body, or head to jerk spasmodically. On inquiry he stated that these spasmodic movements had only affected him since the day he gave up work (that is, the day he nearly crashed with his car), and that they frequently occurred at night just as he was dropping off to sleep—particularly if the room was dark or his eyes were covered up by the bedclothes. His reflexes were all very active, but, apart from this, physical examination failed to reveal any abnormality. The fundi of the eyes and fields of vision were normal, and the ears and throat showed nothing of note. On *x*-ray examination of the skull a few faint opacities suggesting lime salts were seen at the site of the pineal gland, but no abnormality of the sella turcica was made out. He had no vomiting, no adiposity, no abnormal thirst; the urinary output was normal, and examination of the urine revealed nothing of note. His Wassermann reaction was negative, blood sugar normal, and systolic blood pressure 138 mm. of mercury.

When in the ward he slept soundly at night, and frequently dropped off to sleep during the day if the ward was quiet. He often shouted out in his sleep, and at times he would have sudden and fairly violent spasmodic movements of his limbs, body, or head when any unusual noise occurred. He had occasional flushings of his face, and he began to complain of his forehead feeling hot. His forehead undoubtedly felt hot to the touch, and this curious phenomenon has persisted. Throughout his residence in hospital he complained of a feeling of fullness in his head, and at times he had definite headache. He had been much troubled with dreams since a month or two before coming into hospital, and after coming in never slept without dreaming—whether by day or night—and occasionally he had definite "night terrors," which woke him up. Notwithstanding having wakened up in a bad dream he would go off to sleep again quite easily.

During the seven weeks he was under observation in hospital he became less easily "startled," the sleepy attacks became less frequent and he felt less "tired," and before he left the spasmodic jerkings had practically ceased. After leaving he went for a week's holiday, and was decidedly better then. He ascribed the improvement to the fact that he was among strangers, for he felt that he was then better able to control himself.

On returning to his own home the sleepiness recurred as bad as ever. Going to bed at 10.30 p.m. he would sleep till awakened for breakfast about 9.30 a.m., and after having breakfast he would sleep again until roused about midday or he woke of his own accord. When out in the afternoon he always felt that he wanted to drop off to sleep. He would, however, fight against it by keeping on walking, or if somebody accompanied him and kept him occupied by talking the drowsiness was not so troublesome.

About two months after leaving hospital he had his first cataplectic attack.

One afternoon while crossing a busy street, accompanied by his wife, he saw some cars coming towards him, when, suddenly, he became quite limp and unable to move. He had to be supported by his wife, otherwise he might have collapsed to the ground. During this attack, which lasted two or three minutes, he was quite conscious and could see the traffic going round and past him. His wife with difficulty managed to get him across to the pavement, where, after a few minutes, he felt better and was able to walk home. He was weak and rather limp for the remainder of that day. Three days later he had another similar attack.

The spasmodic jerkings returned after the first cataplectic attack, but they and the cataplectic attacks became less troublesome, and about two months later had almost passed off. He was then less drowsy, and felt he had more control of himself, although rather "weak about the knees," and occasionally he would have transient double vision.

His condition has remained much about the same—at times rather better, at other times rather worse. He says that if he worries about himself—for example, about not getting better—he is worse, starts to shake, and gets "jumpy turns." When he does not think about himself he is better. His sleep is just like ordinary sleep, but he never feels properly refreshed afterwards, and always has the feeling of fullness in his head. He sometimes has attacks of continuous yawning, and he thinks that if he "let himself go" he would sleep continuously.

It is now twenty months since the onset of his symptoms, and he has never shown any of the ordinary signs of intracranial tumour. At first the periodic diurnal drowsy attacks—narcoleptic—occurred alone, but later cataplectic seizures were superadded to the clinical picture, and tended to confirm the opinion that the case should be included in the "idiopathic" group of the narcolepsies.

One point only in the previous history is worthy of further mention. He had had an attack of what he called "influenza" when 15 or 16 years of age, and in consequence was off work for three months. There is always the possibility that this might have been encephalitic in nature, but of this one cannot be sure. It was, however, six years later before he began to have occasional and transient attacks of diplopia, and a further three years elapsed before his narcoleptic symptoms began.

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[1] *Gaz. des Hôp. de Paris*, 1880. [2] *Brit. Journ. of Med. Psychol.*, vol. iii, 1923. [3] *Brain*, vol. 51, Part 1, 1928. [4] *Journ. Nerv. and Mental Dis.*, vol. 69, Nos. 1, 2, and 3.

A NOTE ON A COMPARATIVELY RARE DISPLACEMENT OF THE INTERNAL EPICONDYLE OF THE HUMERUS.

BY

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In February, 1928, I operated on a boy of 15, who, as the result of a fall on his hand, had, without any dislocation, driven his internal epicondyle within his elbow-joint. At no time was there any ulnar nerve block. The fragment was withdrawn from the joint and removed. The attached soft parts were used to close the gaping defect in the capsule. Within two months recovery was complete, except for an almost negligible loss of extension that disappeared quickly after his discharge from treatment. Normal appearance and function were regained. *X*-ray outline drawings are shown (Figs. 1 and 2).

It seemed at this time that the lesion was a very rare one, as references to it in medical literature were difficult to find. Since then, however, two papers have appeared which describe the condition, and in one of these the author claims twelve cases. Early this year I met a second case precisely similar to the one briefly described, and

I am now driven to the conclusion that the injury, though seldom recorded, and unencountered by many surgeons of experience with whom I have spoken, is by no means as rare as was at first thought. For this reason it is perhaps not out of place to describe in detail the features of the latter case, together with the operative findings. In the light of the earlier experience gained the nature of the

FIG. 1.

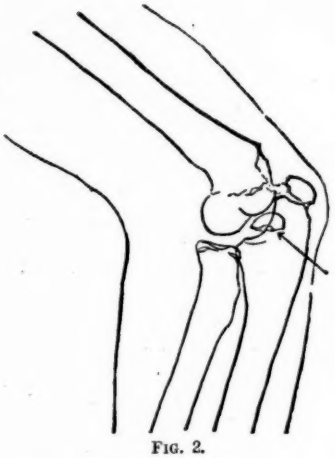

FIG. 2.

lesion was fully realized, and Miss Greg, M.R.C.S., kindly consented to make the sketches of the various stages of the operation which are shown here.

A girl, aged 13, some three or four days before she was seen, had fallen on her forearm, which was pronated and held in front of her. There had been no dislocation. Bruising extended widely over the front and inner aspects of the elbow and its vicinity. Flexion and extension movements were much lessened, but a small intermediate range, surprisingly free and painless, still existed. Tenderness was greatest over the inner side of the lower end of the humerus. The inner condyle was less defined than the outer. No nerve lesion was present. An *x*-ray photograph (Figs. 3 and 4) shows a loose fragment of bone, as Walker described it in his case (loc. cit.), of almost the size and

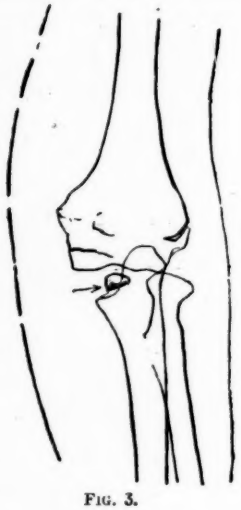

FIG. 3.

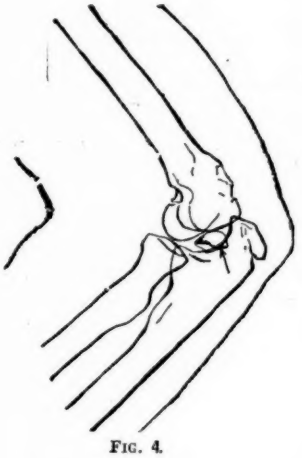

FIG. 4.

shape of a pisiform bone, lying between the widely separated articular surfaces of the humerus and ulna. There is a slight lateral subluxation of the forearm. Corroboration was given to the diagnosis by a skiagram of the normal elbow (Figs. 5 and 6).

The operative exposure was almost startlingly easy. Immediately below the skin, and as soon as its edges were retracted, the stump of the epicondyle, rough and sharply edged, came into view, leading directly downwards and forwards to the inner margin of the trochlear process. This part of the joint was divested entirely of its capsular covering. Just distal to the trochlea, and dipping abruptly into the interior of the joint, stretched a sheet composed of flexor origins and internal lateral ligament, which separated the humerus from the coronoid process of the ulna (Fig. 7). This was easily withdrawn, and brought with it the epicondyle attached (Fig. 8). At this point the amount of lateral play possible in the elbow was extreme. The forearm could be brought out easily to a

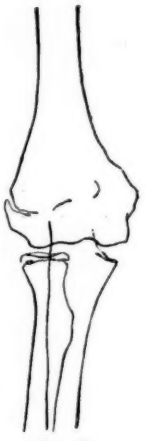

FIG. 5.

FIG. 6.

point of nearly 90 degrees of abduction. The fragment of bone was carried up and stitched to its bed, though, owing to the tension of the attached soft parts, not without difficulty. This exposure of the inner aspect of the humerus was so complete and easily made that the route commended itself as a formal operative approach when free access is desired for any purpose to the trochlea or the inner half of the elbow-joint cavity.

DIAGNOSIS.

Once the condition has been met and its anatomy seen no mistake will be made in the diagnosis when skiagrams in two planes are available. It is, however, doubtful whether the majority of those responsible for the treatment of such injuries would grasp its meaning when meeting it for the first time. My experience suggests that the skiagram does not evoke spontaneous or complete unanimity. No doubt some cases have passed for lesions of the coronoid process or the head of the radius, as in Cotton's patient (loc. cit.). The diagnosis is a pure skiagraphic one, and is to be made on (1) the presence of a small rounded nodule of bone between the gaping articular surfaces of humerus and ulna, and (2) the absence of the epicondyle from the humerus as seen from the front; this gives the internal condyle an abrupt and unfinished appearance. In an imperfectly

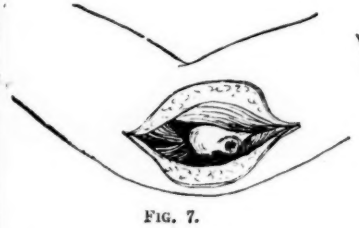

FIG. 7.

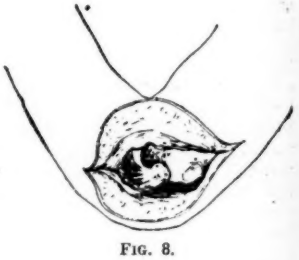

FIG. 8.

directed antero-posterior view this may not be obvious, but close inspection of the lateral skiagram will show the epicondylar base directed as usual somewhat backwards, but shortened, irregular, and jagged. A comparison with the normal side affords immediate help. The clinical examination of the patient does not suggest an injury of an unusual nature or one demanding operative intervention.

LITERATURE.

In 1924 H. A. T. Fairbank showed a skiagram of a similar case, and mentioned three others as examples of a very rare condition in which, as a result of a dislocation, the fractured epicondyle had entered the elbow-joint.

In April last year Walker published a well-illustrated and detailed account of a youth of 18 who dislocated his elbow laterally. The dislocation was reduced, but a subsequent *x*-ray photograph showed a typical fractured and misplaced epicondyle, together with a persisting lateral subluxation. There was an incomplete ulnar nerve lesion. The parts were restored by open operation, and a swollen contused ulnar nerve was noted at the back of the condyle.

This year Cotton records the last three of a series of ten completed cases met with during the last nineteen or twenty years. His first case was published nineteen years ago in his textbook. In addition, he mentions two others, more recent and not completed. Every one of these cases had an ulnar nerve lesion associated with the fracture, and gave a history of a dislocation treated before the patient was brought to his notice.

Etiology.

Fairbank, who speaks with great authority on epiphyses, associates the lesion always with dislocation, and makes the manipulative reduction responsible for the displacement of the epicondyle. It is unfortunate that the nature of the dislocations was not always noted in his account. Walker's case had a lateral dislocation followed by an incomplete reduction before he received it. Of Cotton's three described cases, each had a dislocation reduced before he saw them. Two of these are said to have been posterior; the third he found to be a still unreduced lateral subluxation. Cotton considers the lesion the result of manipulative reduction.

In the two cases here recorded no dislocation was known to have occurred, and certainly no manipulation. The cause, therefore, is not necessarily faulty reduction. In one the forearm was subluxated slightly outwards. So far as my histories are of value, it seems probable that the impact met the forearm held forward with the elbow bent; and, acting against a rigid internally rotated shoulder, caused a violent abduction strain at the elbow which tore away the epicondyle and caused the joint to gape. The amount of lateral mobility found at the operation showed that dislocation sideways would be a possible and even likely complication, and it is suggested that when dislocation occurs it is secondary to the tear of the inner part of the capsule. It is noteworthy that out of the four cases detailed (Walker and Cotton) lateral subluxations were found by the operator in two; the two others gave a history of a posterior displacement, but this had already been corrected.

A striking feature of Cotton's cases is the appearance without exception of the nerve block, which is unmentioned in Fairbank's. These were no doubt primary contusions resulting from stretching and friction over the sharp edges of the epicondylar bed at the moment of abduction, rather than compression due to the tension of soft parts, as Cotton seems to suggest. Not infrequently, as Platt has shown, nerve lesions are found in company with epicondylar separation, whether associated or not with dislocation, and these are possibly of similar origin. In the third case detailed by Cotton the nerve was actually found imprisoned between the humerus and ulna. To me this is capable of no other explanation than that wide abduction was produced with tremendous tension of the soft parts on the inner side of the elbow. The epicondyle and capsule giving way at this point, these structures entered the joint more or less in the same way as fascia, and even skin may be found nipped at the inner side of the knee after a severe abduction injury. The escape of the nerve in those cases in which no conduction block is evident is due presumably to an anatomical arrangement well behind the fracture or to the absence of highly energetic manipulations.

Conclusions.

It is possible that the injury described is distinctly commoner than might be supposed from its scarcity in the literature of elbow-joint lesions.

It is probably caused by a severe abduction strain, and is in the nature of an internal lateral ligament rupture. It is not uncommonly associated with a lateral subluxation of the forearm.

Detachment of the internal epicondyle with its lateral ligament and flexor origins is suggested as an operative approach to the inner side of the elbow-joint.

In conclusion, I must express my thanks to Miss Greg, who has been kind enough to make for me the sketches of the operation and the drawings of the *x*-ray appearances.

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AGGLUTININS TO B. DYSENTERIAE IN THE APPARENTLY HEALTHY.

BY

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My reasons for undertaking the investigation of which details are given were as follows:

1. To obtain an estimate of the number of people now showing agglutinins to *B. dysenteriae* in the absence of a clinical history of the disease, and when the specimens are taken from patients residing in districts in which clinical dysentery is rare.
2. To examine the alleged influence of sex on the prevalence and strength of these reactions.
3. To ascertain the types of the dysentery group most frequently involved.
4. To determine to what extent the occurrence of these so-called normal agglutinins can interfere with the serological diagnosis of dysentery.
5. To compare the agglutinins in healthy people with those of a recent epidemic in order to see if there are any essential differences between them.

Many have investigated the subject, but there is a lack of uniformity in their findings, probably due to different methods of working, variable agglutinability of the cultures, or local epidemiological conditions. A great deal of work was done during the war, when the incidence of dysentery and the number of carriers were above the usual level. It seemed worth while to go into the question again under more settled conditions and with improved methods.

Professor Dreyer's technique was used; each serum was tested with standardized cultures of Shiga's bacillus; Flexner's bacillus, Types V, W, X, Y, and Z; and Sonne's bacillus. In addition to saline controls, each specimen was investigated with a standardized culture of *B. abortus* Bang, as this micro-organism was deemed a suitable contrast to the dysentery group. Positive results were verified at least once by different stocks of culture. Serums to the number of 524 were examined from 262 males and 262 females. The results are shown in the following table.

Males.			Females.		
No. of Specimens.	Types.	Units.	No. of Specimens.	Types.	Units.
2	Positive to Sonne	1	1	Positive to Sonne	6
5	,, ,, ,,	2	6	,, ,, V	2.5
1	,, ,, ,,	6	6	,, ,, V	4.5
1	,, ,, V	4.6	3	,, ,, V	11.5
3	,, ,, V	11.5	1	,, ,, Z	9
1	,, ,, V	46			
1	,, ,, W	13			
1	,, ,, Z	10			
1	,, ,, Y	4.5			
246	Negative to all		245	Negative to all	
262			252		

The total 524 serums showed 33 positive reactions—that is, 6.29 per cent. Most of these positive cases came from crowded industrial areas, and only a few from the rural

districts. The 262 males gave 16 positives, or 6.1 per cent., and the females 17 positives, or 6.48 per cent. The males reacted most frequently to Sonne's bacillus, and the females showed a predilection for Type V of the Flexner group. There were no agglutinins within the limits of dilution used to either the Shiga bacillus or Type X of the Flexner group, and the females failed to agglutinate the W or Y types. The serum giving the strongest reaction was from a male—46 units to Type V. There was no explanation of this high titre. The male showing 13 units to Type W was aged 21 years; he had not been inoculated, had not been abroad, and had never suffered from dysentery. All the positive reactors were questioned with a view to obtaining evidence of present or past disease, but in only one instance could a definite history of dysenteric infection be obtained. This man stated that he had suffered from severe dysentery thirty years previously and that he had lived in India for fifteen years. His reaction was 6 units to Sonne's bacillus; no dysentery bacilli were found in this patient's faeces. Four of the female reactors gave vague histories of periodic diarrhoea, and one woman, with 11.5 units to Type V, had suffered from recent diarrhoea of several months' duration. She stated that during the illness she had passed about seven motions daily, and that slime was present, but no blood. She was now quite well, but a specimen of faeces could not be obtained.

One female serum was positive to *B. abortus*, but no history of illness which could be associated with this micro-organism was obtained. The patient was negative to all the dysentery group. The result is mentioned in view of the recent publications pointing out the pathogenicity of this bacillus for human beings. Several of the positive serums to *B. dysenteriae* were re-examined over a period of four months, and in all except one the titre remained stationary.

A comparison between the results obtained in the above table and the serological findings in a recent small epidemic of dysentery showed that co-agglutinins were absent from the apparently normal series within the limits of dilution of the standardized test, but co-agglutination of closely associated types was common in the patients suffering from acute dysentery. In this epidemic, which was for the most part a Flexner V infection, the strength of the reactions varied from 4 to 114 units, and several specimens reacted in the neighbourhood of 11 units—that is, showed less agglutinins than several of the specimens taken from people showing no clinical evidence of dysentery. The proportion of positives in the epidemic on one test was only 40 per cent., and while this figure contrasts with 6.29 per cent. found in healthy people, it leaves a big residue of negatives.

COMMENT.

Many of the published estimates of the number of healthy people showing agglutinins are higher than on the present occasion. Major Manifold[1] in Poona has recently examined the blood serums of 66 British troops and 121 Indian troops who were not suffering from dysentery, or on the first or second day after the onset of dysentery before agglutination due to the existing attack could become apparent in the serums. He used Professor Dreyer's technique. Of the British 31.8 per cent., and of the Indians 50.6 per cent., were positive to the Flexner group. Flexner V agglutinins were present in a larger percentage and to a higher titre than the agglutinins of the other Flexner strains. The highest titre, 1 in 250, was observed in the Indian troops; the British troops in no instance showed agglutination in a higher dilution than 1 in 125. The high percentage found by this investigator is consistent with local conditions, as Flexner infection is frequent in Poona.

During the war other authorities[2] found agglutinins to the Flexner group in 91 out of a total of 120 recruits. The positive reactions were present in dilutions varying from 1 in 24 to 1 in 192. These results were obtained with Oxford Flexner cultures. No definite history of dysentery could be obtained from these soldiers, but four had recently suffered from diarrhoea and only three had been abroad. Dysentery convalescents and carriers were more frequent at the time of this investigation than they are now, and the high percentage of positives found may be reasonably attributed to subliminal infection resulting from the conditions of camp life at the time.

From the foregoing it will be realized that a patient suffering from dysentery may give a negative agglutination reaction, whereas a person without symptoms of disease may show agglutinins. This paradox is not so misleading as it appears to be, for in an epidemic a bacteriological examination of the faeces soon settles the matter, and, anyway, some of the patients suffering from acute infection may show strong agglutinins with a rapidly changing titre sufficient to give a useful lead when waiting for the isolation of the micro-organism. It is in the isolated case, or when the patient is suffering from mild and protracted diarrhoea, that difficulty arises, and then it is unwise to frame a diagnosis on the agglutination test alone unless the titre is convincing. The Medical Research Council have suggested a standard as indicative of active infection. Their report[3] states that 10 standard agglutinin units per cubic centimetre of serum in a man and 20 units in a woman are, for all practical purposes, diagnostic of an active bacillary dysenteric infection caused by the bacillus agglutinated, and that 6 to 8 units in a man and 12 to 16 units in a woman justify a strong suspicion of dysenteric infection, provided that the patient has not previously had the disease or has not been inoculated. This standard is a great help, especially in so far as it refers to the higher titres, which are definitely stated to be diagnostic, but it is not infallible, and active dysentery cases may not reach the required titre and apparently normal people may exceed it.

When considering the source of these so-called normal agglutinins it should be remembered that, though widespread serious Flexner epidemics are rare in this country among civilians leading an ordinary existence, there is every reason to believe that mild infections are commoner than is generally supposed. Even when patients show definite clinical signs the causal bacillus may be concealed and outgrown by streptococci and *B. coli*. Streptococci are often present in abnormal numbers in Flexner infection. This fallacy is encouraged by faulty technique. Very frequently mild diarrhoea is ignored by the patient and never comes to diagnosis, and further loopholes are left by irregular fermenting types and the various para-dysentery bacilli.

The ease with which dysentery may occur in institutions shows that the micro-organisms are ubiquitous and that they only need some contributory factor to produce typical disease. Shiga infections are rarer in this country than Flexner and associated types, and it seems to be more than a coincidence that agglutinins to Shiga's bacillus were absent from the blood serums of the healthy people under review. The evidence, then, that most of these so-called normal agglutinins are due to subliminal or mild infection may be summarized thus:

(*a*) Shiga infections are rare in this country; agglutinins to this micro-organism are also rare in healthy individuals.

(*b*) When dysentery infections were more frequent in this country the percentage of healthy people showing agglutination was higher than that revealed in the present series.

(*c*) In countries where dysentery is now frequent the percentage of healthy people showing agglutination is much higher than in England. These results have been obtained by up-to-date standard methods, and should be comparable with the present series.

(*d*) Mild attacks of diarrhoea are often ignored by the patient, and do not come under the observation of the physician.

(*e*) Most of the positives in this investigation were obtained from people residing in thickly populated industrial districts.

(*f*) Normal agglutination is absent at birth.

We have a parallel in diphtheria of virulent micro-organisms producing serological changes with transient or unrecognizable disease, and it is now generally admitted that the natural antitoxin found in a large proportion of the population is the outcome of "larval" infection with the diphtheria bacillus. A more lasting antitoxin is produced by this mild diphtheria than by one acute typical attack. Although antitoxin and agglutinins are two

different things, it may be that similar factors are at work in dysenteric infections, and may explain the absence of lasting agglutination in some acute cases and its persistence in those people who can give no history of dysentery.

CONCLUSIONS.

1. Agglutinins to *B. dysenteriae* were present in 6.29 per cent. of 524 serums taken from individuals only one of whom gave a history of dysentery, thirty years previously.

2. The series consisted of an equal number of males and females. The males showed 6.1 per cent. positive and the females 6.48 per cent. The highest titres were found in specimens from males.

3. The males reacted most frequently to Sonne's bacillus, but the highest titres were to Types V, W, and Z of the Flexner group. The females reacted most frequently to Type V Flexner.

4. The presence of these "normal agglutinins" may interfere with serological diagnosis, as they sometimes come within the range of the standards laid down as indicative of active infection; besides, in active infections agglutinins may not always reach these suggested standards.

5. There is sufficient evidence to suggest that these so-called normal agglutinins are the outcome of subliminal or mild infection with homologous or associated micro-organisms, and that the term "normal" when applied to this reaction is a misnomer, and should be avoided.

My thanks are due to Dr. F. M. Rowland of Lichfield for revising the manuscript.

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A CASE OF CONJOINED TWINS.

BY

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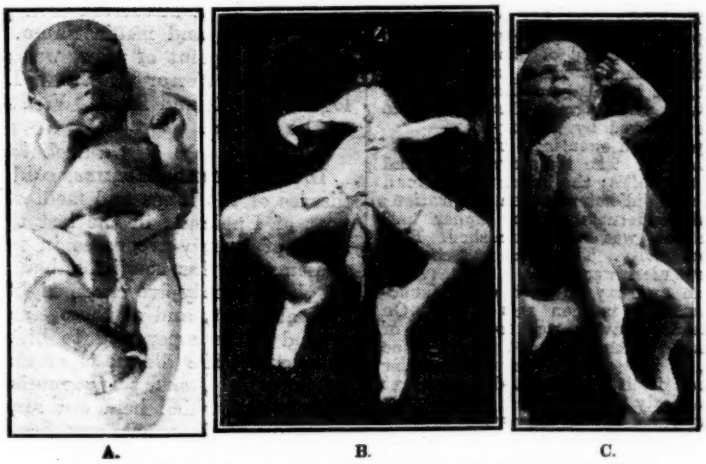
RARE as are conjoined twins, still rarer are cases in which one twin is normal and the other has a parasitic foetus attached. The case recorded below seems, therefore, worthy of publication.

A multipara, aged 35, living near Durban, Natal, gave birth to male twins on November 12th, 1928. The labour was, on the whole, easy. The first child, a head presentation, was normal in every respect, and weighed 7 lb. The second child, a breech presentation, had a parasitic foetus attached to it. I was called half an hour after the delivery, as the midwife, finding an unusual bulging in the umbilical region of the second twin, was afraid to cut the cord. When I arrived I found the placenta in the bed, and after cutting the cord I noticed a hernia-like protrusion of the bowel in the umbilical area.



A. B. C.

A, The conjoined twins at the age of 2 months. B, The parasite immediately after the operation. C, The autosite at the age of 3½ months.

Family History.

The father is 38 years of age, a factory employee of poor physique, below the average height and weight, and of intemperate habits. The mother is a healthy woman, and is of average height, weight, and physique. Three other children (two boys and a girl), aged respectively 7, 5, and 3, are normal in every respect. There is no history of miscarriages or of difficult labour.

The Autosite.

The autosite, a small baby weighing 5 lb. 8 oz., was poorly covered, had deficient muscle tone, loose skin, a Hippocratic facies, and a feeble cry. It was alert, cyanotic, especially about the feet, and had normal powers of suction and deglutition. The head was normal, except that the cranial bones were unusually soft. The lungs, the upper and lower extremities, the abdomen, and the anal orifice were normally developed, and hearing, sight, and intelligence appeared to be normal. On the other hand, a bruit was heard in the heart, due, probably, to a patent foramen ovale, and the genito-urinary system was abnormal. The left testis was undescended, and micturition occurred at independent times from the penis of the autosite and from that of the parasite.

The Parasite.

The parasite was attached to the autosite by a pedicle the circumference of which was about that of half a crown. The pedicle was partly bony and partly muscular. The upper bony part was attached, slightly to the right, to the lower end of the sternum of the autosite; the lower part of the pedicle was muscular, and joined to the upper part of the abdominal wall.

The chest of the parasite was undeveloped, and contained no heart or lungs. Its upper extremities were rudimentary; the right arm was longer than the left, and each hand had one rudimentary metacarpal, finger, and nail. The lower extremities were well developed and equal in size, but they were flexed to a right angle, and could not be straightened or bent any further. The ankles were stiff; each foot had five well-developed toes. There were no testes in the scrotum, but the penis was well formed, and the parasite passed water over the autosite. There was no umbilicus and no anal orifice, though a distinct dimple marked the place of the latter. The parasite displayed no movement, but when its skin was pinched or pricked with a needle the autosite winced and uttered a feeble cry.

Operation for Umbilical Hernia.

On November 13th, when the child was one day old, I opened the abdomen, removed the hernial sac, returned the intestines to the abdomen, and closed the wound. The child made an uninterrupted recovery, the cyanosis disappearing almost at once and its general condition improving. Waterproof material was used to protect the wound from the parasite's urine. Healing took place by first intention, leaving a clean scar.

I considered that the child's condition did not justify an attempt to remove the parasite, and decided to wait a little before undertaking this operation. Later, however, when he was 10 weeks old, I found him looking extremely ill, and was able to induce the father to allow me to remove the parasite at once.

Removal of Parasite.

The operation was performed on February 6th under light chloroform anaesthesia. I made an incision round the pedicle, and on opening the abdomen I found that there was free communication between the abdominal cavities and between the bowels themselves. The peritoneum of the autosite was continuous with that of the parasite, but the latter's bowel had an independent mesentery attached to its posterior abdominal wall. The intestines of the parasite were very thin and narrow; they originated from the autosite's small intestine and ended in its lower bowel. The parasite had one small right kidney, but no liver or spleen. Large blood vessels and nerves passed from the autosite to the parasite. I ligated and cut the vessels passing into the parasite, and then decided to cut through the bowel of the parasite, taking care not to endanger the intestines of the host. Keeping as close to the parasite as possible, I clamped the bowel, removed it as one would an appendix, and returned the host's intestines into his abdomen. I closed the abdomen in the usual manner and brought the edges of the skin together by interrupted silkworm-gut sutures. The operation lasted fifteen minutes, and except for a little sloughing of the wound the child made an uneventful recovery. The parasite weighed 8 ounces.

The child was breast-fed at three-hourly intervals, and twelve hours after the operation he had a normal stool. The fact that thereafter the stools were of normal colour and consistency assured me that his intestines had not been damaged at the operation. He began to improve steadily and gained in weight, and a month after the operation he was still alive and doing well.

PROGNOSIS.

The prognosis is grave. The child is undersized, undeveloped, and has a malformed heart. His environment is bad; the parents live under insanitary conditions, and the child does not receive the care essential for his survival.

His case differs from that of Laloo described by Sir John Bland-Sutton, and from that of Karramat Hussam described by D. D. Kapur; both Laloo and Hussam were well developed and healthy in every other respect. My operation differs from that performed by Kapur, who did not cut through the intestines of the parasite, but transferred them complete into the abdomen of the host.

I wish to record my thanks to Dr. H. Mundy for his valuable help and advice.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPONTANEOUS RUPTURE OF THE SPLEEN.

HAVING read the article by Mr. D. H. Patey in the *British Medical Journal* of May 18th (p. 898), I am submitting the following case, as, in view of its similarity, it may be of interest in conjunction with the other cases.

The patient, a cashier aged 50, was admitted to hospital under the care of Mr. Girling Ball with a history of having, six hours before admission, while standing at his work, been seized with sudden acute pain in the upper abdomen. He vomited once (apparently his last meal); the pain was severe enough to double him up, and he collapsed; the pain remained of about the same severity until admission. For the last ten years he had been troubled by flatulence after food, but had had no clear symptoms suggestive of a gastric ulcer. Many years ago he fractured some ribs on the left side, which was followed by pleurisy.

On admission he was very ill, pale, and sweating. The temperature was 96°, pulse 82, respirations 20. The tongue was dry and furred. The chest showed some bronchitis; the heart was normal. The abdomen was not distended and did not move on respiration; there was marked rigidity and tenderness in the upper half of the abdomen. The liver dullness was not diminished. Free fluid was present in the peritoneal cavity. The urine was normal.

A diagnosis of perforated gastric ulcer was made.

Operation.—Under nitrous oxide and oxygen with ether (endotracheal method) a right paramedian incision was made. On opening the abdomen the peritoneal cavity was found full of blood. This was mopped out, and the haemorrhage found to be coming from an irregular tear, 2 inches long, on the anterior surface of the spleen. The spleen itself was markedly adherent to the abdominal parietes posteriorly and at the upper pole. The abdominal incision was enlarged by a transverse incision across the left rectus muscle and splenectomy performed; all haemorrhage was easily controlled, and the abdominal wound was closed, a drainage tube being inserted down to the region of the spleen. At the conclusion of the operation the patient was transfused with 350 c.cm. of blood.

The patient progressed satisfactorily as regards the abdominal condition, but on the seventh day he developed signs of bronchopneumonia at both bases and a left-sided pleural effusion. He died four days later. There was no post-mortem examination.

Macroscopically the spleen was not diseased, but showed old adhesions posteriorly and at its upper pole. Microscopically there was a slight degree of fibrosis present, and a hyaline degeneration of the blood vessels. The sinusoids were devoid of blood vessels; there was some pigmentation present.

I am indebted to Mr. Girling Ball for permission to publish the case.

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OBSTRUCTED LABOUR DUE TO OVARIAN CYST.

THE following case presented interesting points in diagnosis and treatment.

A married woman, aged 31, who had given birth five years previously to a child after a normal confinement, was admitted to the North Lonsdale Hospital with a report that on examination it had been found impossible to identify the cervix, or to define any presenting part of the foetus, though labour had been in progress for five hours.

General inspection of the abdomen suggested the presence of a relatively large uterus, and by abdominal palpation the vertex was found to be occupying the lower pole of the uterus. The head was not engaged, and was freely movable above the pelvic brim. There were no signs of hydramnios or of a twin pregnancy. The uterine pains were feeble. The foetal heart was normal in rate. On vaginal examination the fingers entered a cul-de-sac with no outlet superiorly, and no cervix was palpable. The posterior vaginal wall was bulging forwards, and it was evident that a mass occupied the pouch of Douglas. Under anaesthesia a tiny chink was felt high up anteriorly, through which the finger could be passed on gentle pressure; the cervix was felt high up in this position, and was dilated to the size of a florin. The mass in the pelvis was firmly impacted, and it was not possible to effect any upward reduction of the tumour. The diagnosis of an ovarian cyst obstructing labour was made; it was ascertained that the child was alive.

The abdomen was opened and the uterus brought through the wound; it was as yet impossible to define the ovarian tumour or to reach its connexions. Caesarean section was therefore performed, and a live female child delivered. The tumour was now apparent; it was of large size and of hour-glass shape, the larger part being abdominal in position, and the lower portion firmly impacted in the pelvis. The pedicle was defined and ligatured and the tumour was removed. The tumour was cystic in nature, and was large enough to fill almost entirely an ordinary pail. The child weighed 8 lb., and the placenta was heavy, hence the total weight removed from the abdomen was very considerable. The puerperium was uneventful, and the patient and her child were ready to be discharged from hospital in three weeks.

I wish to thank Dr. Allan Rutherford for his co-operation in the management of this case.

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Reports of Societies.

CANCER OF THE LUNGS AND MEDIASTINUM.

AT a meeting of the Manchester Medical Society, held at the University, with the president, Dr. R. W. MARSDEN, in the chair, a discussion took place on malignant disease of the lungs and mediastinum. The opening paper, from the clinical point of view, was given by Dr. A. HILLYARD HOLMES; Professor J. SHAW DUNN discussed the pathological aspect, and Dr. E. W. TWINING the radiological side of the subject.

Clinical Aspects.

Dr. HILLYARD HOLMES said that primary malignant disease of the lungs and mediastinum was not rare in that part of England; in the last three years he had collected notes of twenty-five cases in which the possibility of the presence of this condition had to be seriously considered. Of these twenty-five cases, eighteen were finally judged to be malignant, and of these eighteen cases seven were submitted to necropsy and to histological verification of the diagnosis. The diagnosis of malignancy was of vital importance in regard to prognosis, for no form of treatment was known which held out any hope of cure. Since the problem of diagnosis was best illustrated by records of actual cases the speaker cited several in which the diagnosis was established by post-mortem examination.

Case 1.—A man, aged 44, ceased to work in April, 1926, because he had strained his back. Pain in the neck was so severe that his doctor suspected cervical caries, and had an *x*-ray examination made, with a negative result. He lost weight rapidly. Four months later he attended hospital as an out-patient; cough and hoarseness had then existed for only one month. He was thin and pale. His neck movements were stiff: there were signs in both lungs suggestive of chronic phthisis, especially in the left lower lobe. *X*-ray examination showed appearances consistent with old-standing tuberculous disease. The Wassermann reaction was negative. His doctor noticed some small, hard lymph glands over the inner end of the left clavicle, and sent him into hospital as an urgent case two weeks later. Within twenty-four hours the man had a profuse haemoptysis and died. Post-mortem examination showed a large carcinoma in the left lung, at its root, with a cavity 5 cm. in diameter in the lower lobe, full of blod clot; the stomach contained 1½ pints of blood; there were secondary malignant deposits in the right suprarenal gland, left kidney, left cerebral hemisphere, and left supraclavicular glands. Histological examination showed all these growths to be of epithelial nature, with a tendency to alveolar arrangement. The primary growth was a carcinoma of the bronchus. There was no evidence, macroscopic or microscopic, of tuberculosis. The key to the solution of this diagnostic problem was the enlargement of the supraclavicular glands and the rapidity of the man's decline.

Case 2.—A man, aged 64, was in hospital in January, 1925, for left pleural effusion and slight haemoptysis. The effusion was aspirated and artificial pneumothorax induced. Examination of the fluid revealed red and white blood corpuscles and endothelial cells; no organisms were found; cultures were sterile. The sputum

was negative for tubercle bacilli. *X*-ray examination after the air replacement of the effusion showed only "thickened pleura." A year later, January, 1926, an *x*-ray report stated: "Thickened pleura, no fluid, no growth." In November, 1926, the clinical signs suggested effusion in the left pleural cavity, but the radiologist reported: "Thickened pleura, with collapse of the lung." Exploration failed to find any fluid. The Wassermann test was positive (1 in 5 dilution). At this stage the patient was seen by two very eminent physicians, each of whom considered the case to be one of senile tuberculosis. In July, 1927, he was readmitted to hospital on account of dysphagia and vomiting; he was then very emaciated, expectorated copiously, but was afebrile; the sputum was negative for tubercle bacilli. *X*-ray examination showed pressure on the oesophagus at the level of the sixth dorsal vertebra, with dilatation above the stricture. He died a month later, and at necropsy a large carcinoma was found encircling the left main bronchus and the oesophagus; the left lung was collapsed, and there were bronchiectatic cavities in the left lower lobe. This case was noteworthy on account of the duration of the symptoms (three years), the finding of endothelial cells in the pleural effusion two and a half years before death, and the persistently negative findings in the sputum. The evidence of syphilis also introduced another possibility beyond consumption and neoplasm.

Case 3.—A woman, aged 64, was found in April, 1927, to have a large right pleural effusion. She had complained of pain in the right side of the chest for ten weeks, and of dyspnoea for four weeks; there was no cough, and no appreciable loss of weight. She looked healthy, and had never been seriously ill before this occasion. Four pints of fluid were withdrawn, and replaced by air for the express purpose of getting good *x*-ray films. *X* rays revealed no evidence of neoplasm, and the diagnosis of tuberculous pleurisy with effusion was confidently made. Within two months of the first examination she was readmitted to hospital after a severe haemoptysis. Air replacement of the effusion was again carried out, two pints being withdrawn. The sputum was negative for tubercle bacilli. The pleural fluid showed excess of lymphocytes and a few endothelial cells; no organisms were found, and cultures were sterile. Repeated *x*-ray examinations failed to reveal any evidence of neoplasm. She died a week after her second admission to hospital, less than five months from the onset of symptoms. Post-mortem examination revealed malignant disease of the mediastinal glands, with compression and infiltration of both main bronchi and the trachea. The primary growth was in the bronchus. There had been no varices or oedema of the chest wall, and no glandular enlargement in the neck; only the urgency of the dyspnoea, which could not be relieved, had finally suggested the diagnosis of pressure on a main bronchus which might be due to a malignant growth.

Dr. Hillyard Holmes then considered, in a general way, the symptoms, signs, and special investigations which might help to determine whether a particular case was suffering from malignant disease or not. The age of the patient was rarely of much help, though primary thoracic neoplasm was not to be expected before middle life. Cough and dyspnoea were usually progressive and intractable; they might be due to bronchial or pleural irritation, to compression of bronchi by growth, or of lung by effusion, or to pulmonary infiltration or collapse. Pain was a frequent symptom, not relieved by poultices or the advent of pleural effusion. Wasting was not as a rule a marked feature of these cases, nor was anaemia; pyrexia and sweating were not usual unless the case was complicated by tuberculous or pyogenic infection. One of his cases, a man aged 53, proved to have a carcinoma of the left bronchus, pulmonary tuberculosis, and septic broncho-pneumonia.

The appearance of hard, discrete lymph glands at the root of the neck, or in the axillae, strongly suggested that abnormal lung signs might be due to malignancy. When there was primary or secondary growth in the glands of the superior mediastinum, pressure on the innominate veins was likely to cause oedema and varices of the chest wall. In one such case there was marked oedema of the left side of the head, neck, and chest, and of the left arm; at necropsy the lumen of the left innominate vein was found completely occluded by the growth, and the speaker had recently seen a patient where the bilateral oedema of neck and thorax and arms was so marked that the case had been diagnosed as diffuse lipomatosis. Physical signs over the lung were extremely hard to assess; when the growth was extensive in one upper lobe it might be possible with some confidence to exclude unresolved pneumonia, tuberculosis, and encysted empyema; but whichever lobe was involved it was common to find a pleural effusion which masked the underlying cause.

Case 4.—The case of a woman aged 44 illustrates a number of these difficulties. She was admitted to hospital after having been in bed five weeks at home with pneumonia. The provisional diagnosis was unresolved pneumonia, or empyema. Exploration in the eighth space yielded nothing; through the seventh space a little thick pus was obtained, which was presumed to have come from the lung and not from the pleural cavity; it contained no organisms. She was afebrile at this stage. *X*-ray examination was hampered by the necessity of the supine position, and was indecisive. She was again explored twice, with negative results. Another *x*-ray report said: "? Fluid. ? Unresolved pneumonia." She then began to have irregular pyrexia, with foul sputum, slightly blood-stained, suggesting a lung abscess. A third *x*-ray examination showed a shadow which might have been due to an abscess or an encysted empyema. Exploration in three spaces again yielded no fluid of any sort. The opinion that the underlying cause might be malignant was gradually forced upon us. The sputum continued to be blood-stained; she developed varices on the chest wall, and oedema of both arms. Dullness was noted behind the manubrium, and hard glands appeared above the right clavicle. Incidentally, the Wassermann reaction was positive (1 in 10). She died two months after admission to hospital, and only some fourteen weeks from the commencement of her illness, which had been diagnosed as pneumonia. At the post-mortem examination a nodular, hard tumour about the size of a tennis ball was found in the superior mediastinum. In the base of the right lung was a small abscess cavity from which, no doubt, the pus was obtained at the second puncture. There were secondary growths in the neck glands and in the tail of the pancreas.

Pleural effusion in an elderly patient should always be explored, and the fluid be examined cytologically and bacteriologically. Endothelial cells, especially if showing mitosis, suggested malignant disease; lymphocytosis favoured the diagnosis of tuberculosis; blood-stained fluid might be found in either type of case, and tubercle bacilli or pyogenic organisms had their special significance. If sputum and pleural fluid were both negative for tubercle bacilli the biological test of inoculating a guinea-pig with some of the pleural fluid was of great value, a negative result being strong evidence in favour of malignancy when collateral evidence pointed in the same direction. *X*-ray examination, while not always able to reveal a growth, could usually exclude aortic aneurysm and pulmonary tuberculosis. A negative Wassermann test was of some assistance in excluding aneurysm, gumma, and diffuse syphilitic fibrosis of the lung. Sputum tests, if repeatedly negative for tubercle bacilli, in a case with marked lung changes, were of very considerable value as favouring a diagnosis of malignancy when other features of the case also pointed that way.

In conclusion Dr. Hillyard Holmes emphasized several points of value in the diagnosis of intrathoracic neoplasm: (1) The patient was often uncommonly well nourished for a case of malignant disease. (2) Dyspnoea, of recent onset, unaccountable origin, and progressively severe, in a person past middle life, was very suggestive of malignancy in the lower respiratory tract. (3) The rapid appearance of enlarged lymph glands in the neck or axilla, and of oedema and distended veins on the thorax or neck, pointed to mediastinal obstruction which was most probably of a malignant nature. (4) Repeatedly negative sputum tests in an elderly patient with well-marked signs in the lungs almost excluded tuberculosis, and made malignant disease most probable. (5) The commonest cause of failure to diagnose malignant disease of the lungs was failure to appreciate the fact that it may be masked by a coexisting pleural effusion, which effusion was too readily assumed to be tuberculous.

Pathology.

Professor J. SHAW DUNN, discussing the pathology of the growths, said that in many of the tumours in this group the anatomical distribution and the histological structure combined to give an easy diagnosis of carcinoma arising from the lung, or more correctly the bronchi. In a considerable number, however, especially where there was a very large mass in the mediastinum, the interpretation of the gross features might be ambiguous, and histology might reveal the picture of a small-celled growth of peculiar structure, which was difficult to identify. This type of growth had often been called an oat-celled sarcoma or lymphosarcoma, and had been assumed to be a primary growth of mediastinal glands or thymus. It had been shown, however, by W. G. Barnard (1926) that these cellular growths were really medullary carcinomas. Tumours with this histology often might have the same gross distribution as ordinary carcinomas and, furthermore, linking

forms occurred between them and the latter. Barnard's view had now received pretty general acceptance, and it would appear that the vast majority of all mediastino-pulmonary growths were carcinomas derived from the bronchi, while sarcomas of the lymph glands or thymus were somewhat exceptional. The fact of the growths arising from a tissue which was exposed to agencies inhaled from without the body may have much significance for their causation. With regard to the distribution of the tumours and effects on local organs, 45 cases were examined post mortem during the past six years. In 13 of these there was a very large mediastinal growth, and in most of the remainder mediastinal glands were invaded. The lung roots were invaded in all except one case (right 23, left 18, both 3); the single exception was a lymphosarcoma in a youth of 17, the only one of the kind in this series. Bronchial involvement with ulceration and compression was definitely observed in 35 cases, and only noted to be absent in one, the lymphosarcoma. As a result of bronchial obstruction and infection there were abscesses or cavities in the lungs in 23 cases, and other effects in 9 more. The pleurae commonly showed effusions, sometimes haemorrhagic, and in 7 cases there was emphysema. Professor Shaw Dunn said that a very definite increase in the percentage incidence of these tumours among post-mortem cases was observed in Manchester by J. B. Duguid (1927), and analyses made at other centres in this country and abroad all agreed in showing an increased frequency, especially in the past ten years. The cause of this had not been discovered, but it had generally been assumed that prolonged inhalation of some foreign material from the atmosphere must be responsible. In this connexion the special liability of the Schneeberg miners in Saxony to cancer of the lung was of much significance. A possible causal factor for the disease in their case is arsenic, which is present in the dust of the mines. Any theory to account for the prevalence of lung cancer must accord with the fact of its much greater frequency in men than in women. The greater pulmonary ventilation occurring in heavy manual workers might play a part in this.

Radiological Aspects.

Dr. E. W. TWINING said that malignant tumours of lung and mediastinum gave rise to very diverse radiological appearances, which depended less upon primary histological character than upon the rate and mode of progression and on secondary effects—of which the most important were bronchial obstruction, atelectasis, infection, central necrosis with cavity formation, and pleural effusions and thickening. These factors might fundamentally alter the *x*-ray picture in a short time, and the progressive study of these changes in a series of cases had helped in the recognition of cases which came first under observation, as usually happened, with the disease well advanced. The differential diagnosis from tuberculous lesions, from encysted pleural effusions, and inflammatory lesions of the lung was not easy, and required very careful *x*-ray study; the full lateral view was essential, and the "hollow-back" position often useful. Judgement might have to be suspended, and the course of the case watched for a time. Special difficulty in diagnosis attached to the cavernous forms of growth, which simulate chronic abscess.

ACHLORHYDRIA AND PERNICIOUS ANAEMIA.

AT a meeting of the Section of Medicine of the Royal Society of Medicine on June 11th, with Dr. ARTHUR F. HURST in the chair, an address was delivered by Dr. W. B. CASTLE of Boston, U.S.A., on the result of some work carried out in Professor Minot's clinic on the relationship of achlorhydia to pernicious (or Addison's) anaemia.

Dr. Castle expressed the pleasure it gave him to speak on this subject in London, where the description of the disease originated, and where many of its features were first described. It was due to Hurst and other British physicians and investigators that research on the subject was started in America. The speaker believed that achlorhydria was almost invariably present in pernicious anaemia, that it preceded the development of the disease by a considerable interval, even years, and also that in the families of those who developed pernicious anaemia there would be found more than the average incidence of achlorhydria. It was interesting to note that other conditions which might lead to achlorhydria had also been followed by the development of pernicious anaemia. In extensive cancer of the stomach, achlorhydria and pernicious anaemia had been found to develop coincidently or subsequently. This was not always the case, but in some of these cancer cases he had seen the true blood picture and the reaction to liver extract. Certain cases of chronic alcoholism where gastritis had appeared and achlorhydria subsequently developed led in the same way to pernicious anaemia. Three cases were on record—one by Moynihan in this country, a second by Hartmann at the Mayo Clinic, and a third from Heidelberg—in which, after complete removal of the stomach, with, presumably, the production of complete achlorhydria, the patients, surviving the operation for at least a year, developed pernicious anaemia; there was no evidence in these cases of metastases or any other cause, such as bleeding, to explain the anaemia, and apparently in each of them the picture was complete. Dr. Castle mentioned an interesting case in New York. Here pernicious anaemia developed in a child aged 13, at which age the spontaneous appearance of the disease was very unusual. Liver extract was given, and the blood findings showed a characteristic response, but other symptoms, such as vomiting, continued, and, an obstruction at the pylorus being noted, an operation was done. It was found that at the pylorus a number of tuberculous lymph glands were matted together, almost occluding the opening. This, therefore, was a case of achlorhydria produced by obstruction at the pylorus, and producing in some way a picture of pernicious anaemia at an age when it was uncommon for the disease to develop.

The use of liver or liver extract had thrown the greatest light on this subject. When liver was given to a patient with pernicious anaemia he proceeded to develop a normal blood picture, and in every way became better, except perhaps for some residual nervous disturbance, but apparently there was no amelioration of the achlorhydria or achylia previously exhibited. The characteristic response to liver made one think of pernicious anaemia as a deficiency disease, though it was difficult from this point of view to understand why persons who never ate liver did not develop pernicious anaemia at once. It was true that, once having developed the disease, most patients had to continue taking liver or liver extract for the rest of their lives. But the speaker imagined it not difficult to think of a hypothesis which connected achlorhydria with the disease as a deficiency disease. Since liver was largely a protein substance, and the function of the normal stomach was obviously for the peptic digestion of protein, it was thought worth while to take the hypothesis that patients who had achlorhydria developed pernicious anaemia because they could not develop from the protein of ordinary food a certain necessary principle. Within a few days after the patient with pernicious anaemia had been given liver there appeared in the circulating blood a number of immature cells, recognized by the fact that they had a blue-staining network known as reticulum. For patients with less than 3,000,000 red blood cells per cubic millimetre it might be expected that with a maximum dose of liver or liver extract there would be an inverse relationship between the percentage of reticulocytes developed at the maximum point of the reaction and the red blood cell count. The speaker proceeded to describe some experiments, and showed tables which bore out this result. A source of protein in the shape of ordinary beef muscle, finely divided, was taken to the amount of 300 grams and allowed to remain in the stomach of a normal individual for forty-five minutes; then, by stimulating the pharynx, the material was recovered, incubated, and administered through a nasal tube to pernicious anaemia patients. A complete duplication qualitatively was found of the phenomena anticipated with liver or liver extract. Ten cases were so treated, and in all but two of them the expected response of reticulocytes appeared. There were special circumstances attaching to the two cases which did not show the response. The meat itself did not contain anything which was capable of evoking such a response, and it was therefore thought possible that the effective principle was supplied by the normal gastric mucosa, which had operated upon the protein, and from further experiment it appeared to be

demonstrated that the response was due to an interaction between the normal human gastric juice and the beef muscle. It was then desired to find out what was the exact type of interaction which took place, but the experiments with this end in view had not yet been completed. The normal gastric contents included gastric juice, swallowed saliva, and occasional traces of duodenal contents. It had been possible to show that the swallowed saliva had nothing to do with the action. The general result of the experiments so far was to prove the importance of interaction between, on the one hand, some substance which was thermolabile, and which was destroyed under the same conditions as those under which the enzyme activity of gastric pepsin was destroyed, and, on the other hand, a protein which might be obtained from beef muscle. It had not been possible to show that this reaction occurred generally with enzymes operating in an acid medium. Patients were given beef muscle which had been incubated *in vitro* with hydrochloric acid and commercial pepsin, but the results were negative, and the commercial pepsin did not work. The general result of the experiments was consistent with the hypothesis that this reaction was a digestion of the protein made by an enzyme working in an acid medium, but possibly only natural human pepsin was effective in this respect. In conclusion, the speaker mentioned the parallel between diabetes and pernicious anaemia. In diabetes the pancreas was the organ at fault, and the physiological defect was the internal metabolism of carbohydrate; in pernicious anaemia the defect was in the external manipulation of the protein, and the stomach was the defective organ.

Dr. HURST mentioned, in addition to the three cases given by Dr. Castle of pernicious anaemia developing after gastrectomy, one other case recorded by Ellis, in which the patient developed pernicious anaemia five years after the operation.

OBSTETRICS AND GYNAECOLOGY.

AT a meeting of the North of England Obstetrical and Gynaecological Society, held at Leeds on May 24th, Dr. A. M. CLAYE read a paper on "The puerperal morbidity rate in cases delivered normally: a comparison between cases examined vaginally and cases not examined vaginally." This will be published in full in a later issue.

Hypernephroma of the Ovary.

Mr. W. GOUGH (Leeds) showed a specimen of hypernephroma of the ovary. The patient was a married woman, aged 25 years. She had been normal as a child, but when seen she had a deep bass voice, and had to shave daily. The menses had appeared at the age of 13, and were regular up to the age of 20, when they ceased, and the changes in secondary sex characteristics began to appear. Her sexual feelings were normal. A mass, separate from the uterus, was found in the left iliac fossa, and there was some free fluid. On July 25th, 1928, abdominal section was performed. Two or three pints of straw-coloured fluid escaped, and a tumour of the left ovary, which had no adhesions, was removed. It was of bluish colour with pinkish orange excrescences on its surface. The right ovary and uterus were normal, and there were no swellings in the kidney regions. The tumour was reported as a typical hypernephroma. Twenty-eight days after operation the menses appeared. They next occurred a fortnight later, and thereafter were regular. As she last menstruated on April 6th she may be pregnant.

Dr. STEWART (Leeds) said the tumour was a simple benign hypernephroma exactly similar in structure to an adenoma of the adrenal gland. Dr. LEITH MURRAY (Liverpool) asked if male characteristics occur with unilateral renal hypernephromas, and said he thought Glynn asserted that they only occurred with bilateral tumours. Dr. Leith Murray had seen a case of sudden change in sex characteristics in a girl aged 25 in whom no abnormalities in the pelvis or the kidneys could be found. He asked if the cells in this case could be paralutein cells. Dr. STEWART said she did not consider that the cells showed the characteristics of paralutein cells. It was not necessary for the tumours to be bilateral to cause changes in sex characteristics.

Two Cases of Pyometra.

Miss RUTH NICHOLSON (Liverpool) recorded two cases of pyometra. The first patient was a single woman, aged 49, whose chief complaint was a constant vulval irritation for four to five years, and more recently a vaginal discharge. She had had cystitis as a child. The periods commenced at 14, and had always been irregular and scanty. She had not menstruated at all for the last five years. On bimanual examination thickening and fixation of the appendages was felt, and a diagnosis of tuberculous salpingitis was made. At operation very marked adhesions were found. The tubes were nodular, closed, and adherent to the ovaries. Panhysterectomy was performed. When the uterus was opened the cavity was found to be filled with a thick yellow pus. Microscopical sections showed typical giant-celled systems.

The second patient was a woman, aged 70, who had had a high amputation of the cervix eight years previously. She complained of a yellow discharge, partial rectal obstruction, and some vaginal haemorrhage. A mobile, solid mass, about the size of an orange, was felt continuous with the cervix. At operation, as soon as the vessels and cellular tissue had been cut across, the uterus broke away at the point where the previous amputation had been done. The specimen showed the uterine cavity distended with pus and lined with granulation tissue. Microscopically there was no evidence of malignant disease.

Puerperal Infection with B. welchii.

Dr. BURRIDGE (Leeds) recorded a case of puerperal infection with *B. welchii*. The patient was a primipara, aged 39, admitted to hospital with a diagnosis of prolonged labour and vomiting. Labour had commenced on March 21st, and on admission on March 25th her general condition was good; the temperature was 98.4° F., pulse rate 88. Vomiting had ceased, and no pains were present. The uterus was not tender, and no foetal sounds could be heard. The cervix was five shillings dilated, but not fully taken up. There was no change on March 26th, but by the morning of March 27th she was seriously ill, restless, of toxic appearance, and with a rising pulse. By noon the pulse was 120, the abdomen was distended, and the uterus tender. Preparations were made to assist the uterus to empty itself. The cervix was now half dilated, and an unsuccessful attempt was made to dilate it manually. This manipulation allowed the escape of a quantity of highly offensive gas, and some foul, frothy brown fluid. As immediate evacuation of the uterus was inadvisable axis traction forceps were applied, and a weight of 7 lb. was attached to the traction rods over a pulley. Pituitrin 4 minims was given at half-hourly intervals for five doses. These measures were successful, and by 5 p.m. the child's head was born. There was considerable difficulty with the delivery of the trunk owing to the enormous gaseous distension of the abdomen. Following delivery there was a free escape of brownish frothy fluid and much gas, but no haemorrhage. Swabs from the interior of the uterus, umbilical cord, and foetal abdomen gave a good growth of *B. welchii*. The patient stood delivery well, but in the evening restoratives were necessary. The next morning she was a little better, but the placenta was still in the uterus. It was left alone, as it was not causing symptoms. On March 28th 10 c.cm. Weinberg antigas gangrene serum and 40 c.cm. antistreptococcal serum were given. Further doses of antigas gangrene serums were given on the second, third, fourth, fifth, sixth, eighth, and eleventh days of the puerperium. Attempts to express the placenta on the fourth and fifth days of the puerperium were useless, but very painful. The patient remained *in extremis* for four days after delivery, and a change for the better was then noticed. Progress towards recovery was then remarkable, despite a vesico-vaginal fistula, which became manifest on the sixth day. By the seventeenth day the uterus was down to the pubis, and the lochia were scanty and non-offensive. The patient was sitting up on the twenty-first day, and walked a few steps on the thirty-fifth day.

The main points of the case are: (1) the absence of haemorrhage; (2) the fact that the placenta was never recovered would suggest that it was liquified; (3) the

retained placenta may have prevented the spread of infection; (4) the value of antigas gangrene serum.

Dr. CROFT (Leeds) remarked on another case which had been reported where a weight and traction rods were used to secure delivery. Professor CARLTON OLDFIELD (Leeds) mentioned a case of full-term ectopic pregnancy in which the child was extracted, but the placenta never came away. Later, this patient had an operation for ventral hernia, and no trace of the placenta could be found. Dr. STACEY (Sheffield) commented on the method of delivery as being useful in cases where there were no pains, and a dead child, in the presence of infection of the mother.

Dr. KING (Sheffield) had had three cases of *B. welchii* infection, none of which had recovered. He thought the conduct of labour in this case had been admirably conservative. He believed the idea of forceps *plus* a weight to be a valuable one, but that it had dangers, as witness the vesico-vaginal fistula in this case. He thought that labour ceased because there was an oedema of the uterine muscle, which caused paralysis. He had had a case in which he left the placenta *in situ*, and on the tenth day a portion about the size of a five-shilling piece was passed, and that was all. He considered that in the presence of a gas-forming organism tissue destruction must be much more rapid. Dr. LEITH MURRAY (Liverpool) had seen two cases of gas gangrene infection, both of which were fatal. The distressing feature he noticed was that the patients were acutely conscious although their bodies were really dead.

Dr. BAILEY (Leeds) had seen a number of cases of retained placenta. He always left the placenta alone in the absence of symptoms. Altogether he had had about thirty cases, and quoted some in which the placenta came away at varying intervals from thirty hours to six days, and one case where the woman would not allow him to examine her or to see the lochia. In this case, to the best of his knowledge, the placenta never came away. She was seen in his surgery two months after her confinement, quite well.

ENTERO-VESICAL FISTULA.

Professor CARLTON OLDFIELD (Leeds) reported two cases of entero-vesical fistula. The first patient was originally seen in 1914. A diagnosis of diverticulitis was then made and a pelvic abscess drained by posterior colpotomy. In 1928 the patient had three attacks of pain at different times, and after the third attack began to pass faeces and flatus from the bladder. This made the speaker still more certain that the condition was diverticulitis. The patient now had so much trouble that something had to be done. No information was obtained from cystoscopy. Abdominal section was performed and very dense adhesions were found. Eventually the bladder, uterus, and sigmoid were separated and a stony hard swelling was found adherent to the uterus and sigmoid. This was eventually separated, leaving a hole in the sigmoid, and a track lined by granulation tissue was discovered leading down to the bladder. The track was scraped and the hole in the sigmoid closed. The patient later developed obstruction, which was relieved by a caecostomy, and thereafter she made a good recovery. The report on the nodule was "typical, caseating, active tuberculosis; some parts of ovary, and plain muscle, are present." Professor Oldfield thought that the original lesion must have been tuberculous salpingitis.

The second case was one in which a vesico-vaginal fistula followed a Wertheim's operation. The fistula was repaired and a few days later urine was being passed per rectum. No further treatment was undertaken for this patient, and she remained quite well. Her only disability was the necessity for frequent bowel actions to pass urine.

RADIUM TREATMENT OF BUCCAL CANCER.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held in Dublin at the Royal College of Physicians on May 26th, with Mr. R. A. STONEY in the chair.

Mr. WALTER C. STEVENSON, in a paper on radium technique, said that unless those who used this powerful agent had suitable apparatus, and fully appreciated the physical properties which govern radiation, disastrous results would follow. This note of warning was necessary in the present boom, when those without previous experience might be tempted to employ this agent. He dealt briefly with the importance of obtaining uniform radiation and efficient treatment without over-dosage, and the risks of stimulating a growth by too small doses. He advocated the closest co-operation between the "radio-surgeon" and the specialist when carrying out surgical procedures in special branches, as in the throat or gynaecological conditions.

Mr. Stevenson showed six patients; in three of these an apparent clinical cure of cancer of the tongue, involving the floor of the mouth, and one of cancer of the lip, had been obtained by inserting six iridio-platinum needles containing 53.93 mg. of radium element, combining this treatment with surface application. A cancer of the tongue, in which a cauliflower growth had already disappeared, had not yet healed, the patient only having been treated about ten days before. A recent case of extensive cancer involving the whole upper lip and mucous membrane of the cheek, was also shown, in which twelve needles, containing 1 mg. of element each, had been employed in three positions, or thirty-six foci, during eighteen days. This patient had so far done remarkably well, all the growth in the lip having disappeared, and most of the growth in the cheek.

The CHAIRMAN said that, although some of the cases shown by Mr. Stevenson could not at present be claimed as cures, others appeared to be clinically cured, though it was not possible to say whether there would be a recurrence later on. In cases of carcinoma of the tongue there was at present a great tendency to recommend radium rather than operation. Operation in these cases entailed considerable risk, and if it was possible to get something which was at least as certain of doing good and of preventing recurrence he thought it should be recommended. When, however, he came across a case of early cancer of the tongue which could be removed by a partial excision of the tongue he did not feel justified in advising radium treatment, as in these cases it was possible to remove the growth at operation without producing any material deformity, and cure could be promised. There was also a certain class of case in which great assistance was derived by either radium treatment or *x*-ray treatment in rendering inoperable cases operable.

Dr. M. HAYES, referring to the complexities of radiotherapy, said that a tremendous amount of damage would be done unless those employing radium treatment would be guided by persons with previous experience of it. The physics of radium should be thoroughly understood by those using it in the treatment of disease. One of the chief dangers was radium burns, but unless the dose had been greatly excessive most of these could be healed by the application of normal saline solution. Referring to the problem of radium therapy *versus* operation, he said that if a malignant condition was operable surgery was preferable to all or any forms of radium treatment. Time alone would settle which was the best method. In cases of cancer of the tongue he thought radium treatment was preferable to operation, as after the treatment the tongue and speech were normal, and there was not the risk of deformity which surgery entailed.

Mr. C. J. MACAULEY said that cases of epithelioma of the lip, whether early or late, benefited by surgery, but as cases of carcinoma of the tongue and floor of the mouth were practically never seen in the early stages they did better by radium treatment. He always prepared such patients for radium treatment by getting any bad teeth removed and excising the glands in the neck; he thought it was a great mistake to treat these cases by radium without carrying out an extensive excision of the glands in the neck beforehand. Operations for cancer of the mouth carried a very high mortality, left the patients very deformed, and did not ensure any better promise of lasting good than radium treatment. He thought that the outlook for these patients was very much better at present than it had ever been before, and that any growth which could not be freely excised should be treated by radium.

Mr. A. CHANCE said that in the present state of knowledge he was convinced that radium treatment was suitable for all cancers of the tongue, except in very advanced

cases, where cure by any treatment was out of the question and the use of radium would discredit its value. The ultimate results of surgery in cancer of the tongue were as bad as they could be, and time alone would show what were the ultimate results to be expected with radium. On the established facts, radium should be the method of choice even in the earliest growths. The toilet of the mouth should be carried out before radium application. To extract a septic stump after radium application was to ask for septicaemia, as the vitality of the surrounding irradiated tissues favoured its development. There were reports in the literature of fatal results so brought about.

TUBERCULOMA IN THE FRONTAL LOBE.

Professor H. F. MOORE and Mr. C. J. MACAULEY showed a boy, aged 15, who, five years prior to his admission to the Mater Misericordiae Hospital, had sustained a head injury with a scalp wound in the left parietal region. Two years later he began to suffer from twitchings of the right side of the face, right eye, and right arm; the twitchings were preceded by an aura of taste, but the boy never lost consciousness. He had an attack while in hospital, and for some time after had considerable difficulty in speech. On examination an irregular defect could be felt over the upper part of the left parietal bone. There was paresis of the right arm with distinct astereognosis. The boy walked with a hemiplegic gait and the abdominal reflex was absent on the right side; Babinski's sign, ankle, and rectus clonus were present. Examination of the eyes revealed double optic neuritis with advancing atrophy, the latter being more advanced in the left eye. The Wassermann reaction was negative. X-ray examination showed convolutional atrophy but no bony depression. A diagnosis was made of a cerebral lesion involving the lower part of the left Rolandic area, possibly post-traumatic, and an operation was performed by Mr. MacAuley. A large scalp flap was turned down over the left fronto-parietal region. There was an irregular linear defect in the upper part of the left parietal bone, through which a bluish membrane presented; the defect was enlarged, the extreme thinness of the skull being noteworthy. The membrane, when incised, proved to be the dura mater, and some fluid escaped under moderate tension. The underlying brain was oedematous with flattened convolutions. Through th[e] soft brain tissue one could palpate a firm nodular mass [in] the interior of the frontal lobe. The pial vessels we[re] ligatured and the brain was incised. The tumour was th[en] gently enucleated. It weighed 98 grams, and on sect[ion] proved to be a tuberculoma. The boy made a comp[lete] recovery; he has had no twitchings since the operat[ion] and power has remarkably increased in the right [arm]. Weakness in the internal rectus had now gone and [the] Babinski reflex was absent.

The CHAIRMAN said that the preliminary sympto[ms] this case were difficult to explain in view of the [new] logical findings. It was interesting to note the larg[e] of the tumour and its consistency. Tuberculomas [are] usually small; as they got bigger they turned into [the] abscesses. Mr. W. PEARSON thought the prognosis [in] case was exceedingly good, and asked if there ha[d] any urinary trouble. During the war he had seen a [large] number of frontal lesions, and the cases almost inv[ariably] suffered from disturbances of micturition. Mr. [it] McCONNELL said it was interesting to see a case in [which] it was possible to remove the tumour, and to find tha[t] a large tumour turned out to be a tuberculoma. [In] experience tuberculomas were rare, and the progn[osis] the majority of cases was bad, owing to the pres[ence] multiple tumours and the onset of dissemination. [He] thought that in the present case the patient would [remain] ably continue well; if there was to have been disse[mination] it would have taken place already.

Mr. MACAULEY, in replying, said he understood that [the] boy had at one time some nocturnal incontinence, but [on] admission to hospital this had disappeared.

NON-PARASITIC CYSTS OF THE LIVER.

Mr. F. MORRIN read a paper on non-parasitic cysts [of] the liver. He reported two cases of polycystic disease of the liver which had occurred in sisters during their third and fourth decade respectively. The family history revealed that the father died of pernicious anaemia, and a sister died at the age of 25 from some obscure abdominal complaint. One case was an abdominal emergency, a ruptured parovarian cyst being found at operation. The liver showed extensive polycystic disease, and, in addition, there were cysts in the transverse mesocolon and a cyst situated below the left kidney. The other patient complained of attacks of right-sided abdominal pain and vomiting. Operation disclosed polycystic disease of the liver and localized inflammatory reaction over some large cysts in the right lobe. In this case functional liver tests which were carried out showed no deviation from the normal. The varieties of cysts met with and the views as to their origin were mentioned. The familial association of the cases reported supported the view that the condition was most probably a developmental anomaly. Reference was made to the great difficulty in diagnosis, owing to the absence of jaundice and freedom from digestive disturbance; functional tests in one of the cases showed that the pigmentary, glycogenic, and excretory function of the liver was unaffected.

The CHAIRMAN said that polycystic disease of the liver and kidneys was of interest from an embryological point of view, and he had always been of opinion that these diseases must be due to some congenital abnormality. The fact that the fluid contained in the cysts was of a more or less non-biliary character suggested that it must be the product of cells not normally found in the liver. Mr. MACAULEY said that he thought a large number of cases of polycystic disease of the kidney were associated with polycystic disease of the liver. He wondered what the subsequent fate of patients with this disease was, and if death ensued from interference with liver function. Dr. A. B. CLERY remarked that Dr. Lindo had suggested that the disease was due to the maldevelopment of mesoblastic tissue in the fourth month of life.

Mr. MORRIN, in replying, said that according to the literature no necropsies had been performed in cases of polycystic disease of the liver except in children, but the oldest patient operated on for the condition was 82. In the great majority of cases the condition did not lead to early death, though [illegible]

[illegible] spiritual universe; and [illegible] from individuality in that the former carries with it an element of universality. He pleads for the view that dissociation is just as necessary in the mind as association; and that it only becomes pathological when there is failure of the normal process of dissociation. Dr. Brown disagrees with the extreme views of the Freudians, and the overemphasis of the sex factor. On spiritual healing he adopts a non-committal attitude, as is perhaps natural in one who sat on the Archbishop of Canterbury's committee. He seems, however, to lean to a belief in telepathy, although he says that it is something about whose conditions we know next to nothing. He includes in his book two chapters on some investigations he has made into psychical research through a medium named Mrs. Osborne Leonard. He seems to have convinced himself, from various happenings at the séances, that there was "something in it." But another case in which he investigated the clairvoyant capacity of a shell-shocked soldier makes us, we are bound to confess, a little sceptical of Dr. Brown's valuation of results. Sixteen observations by the clairvoyant soldier were compared with extracts from letters received from his wife and daughter. Dr. Brown finds about 50 per cent. correspondence. Careful examination of the patient's statements and the information extracted from the letters suggests that a reckoning of 25 per cent. correspondence would be more than generous.

Interesting though the book is, it leaves in us a feeling that the scientific philosopher is inclined to magnify the position of man in the universe, forgetting that most of the human characteristics upon which we pride ourselves may not, after all, be very far removed from those of other animals; and that the investigation of the pseudo-sciences needs a kind of judgement which the scientific philosopher does not always possess.

[6] *Science and Personality.* By William Brown, M.D.Oxon., D.Sc.Lond. With a foreword by Sir Oliver Lodge, D.Sc., F.R.S. London: Milford, Oxford University Press. 1929. (Demy 8vo, pp. viii + 258. 12s. 6d. net.)

forms occurred between them and the latter. Barnard's view had now received pretty general acceptance, and it would appear that the vast majority of all mediastino-pulmonary growths were carcinomas derived from the bronchi, while sarcomas of the lymph glands or thymus were somewhat exceptional. The fact of the growths arising from a tissue which was exposed to agencies inhaled from without the body may have much significance for their causation. With regard to the distribution of the tumours and effects on local organs, 45 cases were examined post mortem during the past six years. In 13 of these there was a very large mediastinal growth, and in most of the remainder mediastinal glands were invaded. The lung roots were invaded in all except one case (right 23, left 18, both 3); the single exception was a lymphosarcoma in a youth of 17, the only one of the kind in this series. Bronchial involvement with ulceration and compression was definitely observed in 35 cases, and only noted to be absent in one, the lymphosarcoma. As a result of bronchial obstruction and infection there were abscesses or cavities in the lungs in 23 cases, and other effects in 9 more. The pleurae commonly showed effusions, sometimes haemorrhagic, and in 7 cases there was emphysema. Professor Shaw Dunn said that a very definite increase in the percentage incidence of these tumours among post-mortem cases was observed in Manchester by J. B. Duguid (1927), and analyses made at other centres in this country and abroad all agreed in showing an increased frequency, especially in the past ten years. The cause of this had not been discovered, but it had generally been assumed that prolonged inhalation of some foreign material from the atmosphere must be responsible. In this connexion the special liability of the Schneeberg miners in Saxony to cancer of the lung was of much significance. A possible causal factor for the disease in their case is arsenic, which is present in the dust of the mines. Any theory to account for the prevalence of lung cancer must accord with the fact of its much greater frequency in men than in women. The greater pulmonary ventilation occurring in heavy manual workers might play a part in this.

Radiological Aspects.

Dr. E. W. TWINING said that malignant tumours of lung and mediastinum gave rise to very diverse radiological appearances, which depended less upon primary histological character than upon the rate and mode of progression and on secondary effects—of which the most important were bronchial obstruction, atelectasis, infection, central necrosis with cavity formation, and pleural effusions and thickening. These factors might fundamentally alter the *x*-ray picture in a short time, and the progressive study of these changes in a series of cases had helped in the recognition of cases which came first under observation, as usually happened, with the disease well advanced. The differential diagnosis from tuberculous lesions, from encysted pleural effusions, and inflammatory lesions of the lung was not easy, and required very careful *x*-ray study; the full lateral view was essential, and the "hollow-back" position often useful. Judgement might have to be suspended, and the course of the case watched for a time. Special difficulty in diagnosis attached to the cavernous forms of growth, which simulate chronic abscess.

ACHLORHYDRIA AND PERNICIOUS ANAEMIA.

AT a meeting of the Section of Medicine of the Royal Society of Medicine on June 11th, with Dr. ARTHUR F. HURST in the chair, an address was delivered by Dr. W. B. CASTLE of Boston, U.S.A., on the result of some work carried out in Professor Minot's clinic on the relationship of achlorhydria to pernicious (or Addison's) anaemia.

Dr. Castle expressed the pleasure it gave him to speak on this subject in London, where the description of the disease originated, and where many of its features were first described. It was due to Hurst and other British physicians and investigators that research on the subject was started in America. The speaker believed that achlorhydria was almost invariably present in pernicious anaemia, that it preceded the development of the disease by a considerable interval, even years, and also that in the families of those who developed pernicious anaemia there would be found more than the average incidence of achlorhydria. It was interesting to note that other conditions which might lead to achlorhydria had also been followed by the development of pernicious anaemia. In extensive cancer of the stomach, achlorhydria and pernicious anaemia had been found to develop coincidently or subsequently. This was not always the case, but in some of these cancer cases he had seen the true blood picture and the reaction to liver extract. Certain cases of chronic alcoholism where gastritis had appeared and achlorhydria subsequently developed led in the same way to pernicious anaemia. Three cases were on record—one by Moynihan in this country, a second by Hartmann at the Mayo Clinic, and a third from Heidelberg—in which, after complete removal of the stomach, with, presumably, the production of complete achlorhydria, the patients, surviving the operation for at least a year, developed pernicious anaemia; there was no evidence in these cases of metastases or any other cause, such as bleeding, to explain the anaemia, and apparently in each of them the picture was complete. Dr. Castle mentioned an interesting case in New York. Here pernicious anaemia developed in a child aged 13, at which age the spontaneous appearance of the disease was very unusual. Liver extract was given, and the blood findings showed a characteristic response, but other symptoms, such as vomiting, continued, and, an obstruction at the pylorus being noted, an operation was done. It was found that at the pylorus a number of tuberculous lymph glands were matted together, almost occluding the opening. This, therefore, was a case of achlorhydria produced by obstruction at the pylorus, and producing in some way a picture of pernicious anaemia at an age when it was uncommon for the disease to develop.

The use of liver or liver extract had thrown the greatest light on this subject. When liver was given to a patient with pernicious anaemia he proceeded to develop a normal blood picture, and in every way became better, except perhaps for some residual nervous disturbance, but apparently there was no amelioration of the achlorhydria or achylia previously exhibited. The characteristic response to liver made one think of pernicious anaemia as a deficiency disease, though it was difficult from this point of view to understand why persons who never ate liver did not develop pernicious anaemia at once. It was true that, once having developed the disease, most patients had to continue taking liver or liver extract for the rest of their lives. But the speaker imagined it not difficult to think of a hypothesis which connected achlorhydria with the disease as a deficiency disease. Since liver was largely a protein substance, and the function of the normal stomach was obviously for the peptic digestion of protein, it was thought worth while to take the hypothesis that patients who had achlorhydria developed pernicious anaemia because they could not develop from the protein of ordinary food a certain necessary principle. Within a few days after the patient with pernicious anaemia had been given liver there appeared in the circulating blood a number of immature cells, recognized by the fact that they had a blue-staining network known as reticulum. For patients with less than 3,000,000 red blood cells per cubic millimetre it might be expected that with a maximum dose of liver or liver extract there would be an inverse relationship between the percentage of reticulocytes developed at the maximum point of the reaction and the red blood cell count. The speaker proceeded to describe some experiments, and showed tables which bore out this result. A source of protein in the shape of ordinary beef muscle, finely divided, was taken to the amount of 300 grams and allowed to remain in the stomach of a normal individual for forty-five minutes; then, by stimulating the pharynx, the material was recovered, incubated, and administered through a nasal tube to pernicious anaemia patients. A complete duplication qualitatively was found of the phenomena anticipated with liver or liver extract. Ten cases were so treated, and in all but two of them the expected response of reticulocytes appeared. There were special circumstances attaching to the two cases which did not show the response. The meat itself did not contain anything which was capable of evoking such a response, and it was therefore thought possible that the effective principle was supplied by the normal gastric mucosa, which had operated upon the protein, and from further experiment it appeared to be

demonstrated that the response was due to an interaction between the normal human gastric juice and the beef muscle. It was then desired to find out what was the exact type of interaction which took place, but the experiments with this end in view had not yet been completed. The normal gastric contents included gastric juice, swallowed saliva, and occasional traces of duodenal contents. It had been possible to show that the swallowed saliva had nothing to do with the action. The general result of the experiments so far was to prove the importance of interaction between, on the one hand, some substance which was thermolabile, and which was destroyed under the same conditions as those under which the enzyme activity of gastric pepsin was destroyed, and, on the other hand, a protein which might be obtained from beef muscle. It had not been possible to show that this reaction occurred generally with enzymes operating in an acid medium. Patients were given beef muscle which had been incubated *in vitro* with hydrochloric acid and commercial pepsin, but the results were negative, and the commercial pepsin did not work. The general result of the experiments was consistent with the hypothesis that this reaction was a digestion of the protein made by an enzyme working in an acid medium, but possibly only natural human pepsin was effective in this respect. In conclusion, the speaker mentioned the parallel between diabetes and pernicious anaemia. In diabetes the pancreas was the organ at fault, and the physiological defect was the internal metabolism of carbohydrate; in pernicious anaemia the defect was in the external manipulation of the protein, and the stomach was the defective organ.

Dr. HURST mentioned, in addition to the three cases given by Dr. Castle of pernicious anaemia developing after gastrectomy, one other case recorded by Ellis, in which the patient developed pernicious anaemia five years after the operation.

OBSTETRICS AND GYNAECOLOGY.

AT a meeting of the North of England Obstetrical and Gynaecological Society, held at Leeds on May 24th, Dr. A. M. CLAYE read a paper on "The puerperal morbidity rate in cases delivered normally: a comparison between cases examined vaginally and cases not examined vaginally." This will be published in full in a later issue.

Hypernephroma of the Ovary.

Mr. W. GOUGH (Leeds) showed a specimen of hypernephroma of the ovary. The patient was a married woman, aged 25 years. She had been normal as a child, but when seen she had a deep bass voice, and had to shave daily. The menses had appeared at the age of 13, and were regular up to the age of 20, when they ceased, and the changes in secondary sex characteristics began to appear. Her sexual feelings were normal. A mass, separate from the uterus, was found in the left iliac fossa, and there was some free fluid. On July 25th, 1928, abdominal section was performed. Two or three pints of straw-coloured fluid escaped, and a tumour of the left ovary, which had no adhesions, was removed. It was of bluish colour with pinkish orange excrescences on its surface. The right ovary and uterus were normal, and there were no swellings in the kidney regions. The tumour was reported as a typical hypernephroma. Twenty-eight days after operation the menses appeared. They next occurred a fortnight later, and thereafter were regular. As she last menstruated on April 6th she may be pregnant.

Dr. STEWART (Leeds) said the tumour was a simple benign hypernephroma exactly similar in structure to an adenoma of the adrenal gland. Dr. LEITH MURRAY (Liverpool) asked if male characteristics occur with unilateral renal hypernephromas, and said he thought Glynn asserted that they only occurred with bilateral tumours. Dr. Leith Murray had seen a case of sudden change in sex characteristics in a girl aged 25 in whom no abnormalities in the pelvis or the kidneys could be found. He asked if the cells in this case could be paralutein cells. Dr. STEWART said she did not consider that the cells showed the characteristics of paralutein cells. It was not necessary for the tumours to be bilateral to cause changes in sex characteristics.

Two Cases of Pyometra.

Miss RUTH NICHOLSON (Liverpool) recorded two cases of pyometra. The first patient was a single woman, aged 49, whose chief complaint was a constant vulval irritation for four to five years, and more recently a vaginal discharge. She had had cystitis as a child. The periods commenced at 14, and had always been irregular and scanty. She had not menstruated at all for the last five years. On bimanual examination thickening and fixation of the appendages was felt, and a diagnosis of tuberculous salpingitis was made. At operation very marked adhesions were found. The tubes were nodular, closed, and adherent to the ovaries. Panhysterectomy was performed. When the uterus was opened the cavity was found to be filled with a thick yellow pus. Microscopical sections showed typical giant-celled systems.

The second patient was a woman, aged 70, who had had a high amputation of the cervix eight years previously. She complained of a yellow discharge, partial rectal obstruction, and some vaginal haemorrhage. A mobile, solid mass, about the size of an orange, was felt continuous with the cervix. At operation, as soon as the vessels and cellular tissue had been cut across, the uterus broke away at the point where the previous amputation had been done. The specimen showed the uterine cavity distended with pus and lined with granulation tissue. Microscopically there was no evidence of malignant disease.

Puerperal Infection with B. welchii.

Dr. BURRIDGE (Leeds) recorded a case of puerperal infection with *B. welchii*. The patient was a primipara, aged 39, admitted to hospital with a diagnosis of prolonged labour and vomiting. Labour had commenced on March 21st, and on admission on March 25th her general condition was good; the temperature was 98.4° F., pulse rate 88. Vomiting had ceased, and no pains were present. The uterus was not tender, and no foetal sounds could be heard. The cervix was five shillings dilated, but not fully taken up. There was no change on March 26th, but by the morning of March 27th she was seriously ill, restless, of toxic appearance, and with a rising pulse. By noon the pulse was 120, the abdomen was distended, and the uterus tender. Preparations were made to assist the uterus to empty itself. The cervix was now half dilated, and an unsuccessful attempt was made to dilate it manually. This manipulation allowed the escape of a quantity of highly offensive gas, and some foul, frothy brown fluid. As immediate evacuation of the uterus was inadvisable axis traction forceps were applied, and a weight of 7 lb. was attached to the traction rods over a pulley. Pituitrin 4 minims was given at half-hourly intervals for five doses. These measures were successful, and by 5 p.m. the child's head was born. There was considerable difficulty with the delivery of the trunk owing to the enormous gaseous distension of the abdomen. Following delivery there was a free escape of brownish frothy fluid and much gas, but no haemorrhage. Swabs from the interior of the uterus, umbilical cord, and foetal abdomen gave a good growth of *B. welchii*. The patient stood delivery well, but in the evening restoratives were necessary. The next morning she was a little better, but the placenta was still in the uterus. It was left alone, as it was not causing symptoms. On March 28th 10 c.cm. Weinberg antigas gangrene serum and 40 c.cm. antistreptococcal serum were given. Further doses of antigas gangrene serums were given on the second, third, fourth, fifth, sixth, eighth, and eleventh days of the puerperium. Attempts to express the placenta on the fourth and fifth days of the puerperium were useless, but very painful. The patient remained *in extremis* for four days after delivery, and a change for the better was then noticed. Progress towards recovery was then remarkable, despite a vesico-vaginal fistula, which became manifest on the sixth day. By the seventeenth day the uterus was down to the pubis, and the lochia were scanty and non-offensive. The patient was sitting up on the twenty-first day, and walked a few steps on the thirty-fifth day.

The main points of the case are: (1) the absence of haemorrhage; (2) the fact that the placenta was never recovered would suggest that it was liquified; (3) the

retained placenta may have prevented the spread of infection; (4) the value of antigas gangrene serum.

Dr. CROFT (Leeds) remarked on another case which had been reported where a weight and traction rods were used to secure delivery. Professor CARLTON OLDFIELD (Leeds) mentioned a case of full-term ectopic pregnancy in which the child was extracted, but the placenta never came away. Later, this patient had an operation for ventral hernia, and no trace of the placenta could be found. Dr. STACEY (Sheffield) commented on the method of delivery as being useful in cases where there were no pains, and a dead child, in the presence of infection of the mother.

Dr. KING (Sheffield) had had three cases of *B. welchii* infection, none of which had recovered. He thought the conduct of labour in this case had been admirably conservative. He believed the idea of forceps *plus* a weight to be a valuable one, but that it had dangers, as witness the vesico-vaginal fistula in this case. He thought that labour ceased because there was an oedema of the uterine muscle, which caused paralysis. He had had a case in which he left the placenta *in situ*, and on the tenth day a portion about the size of a five-shilling piece was passed, and that was all. He considered that in the presence of a gas-forming organism tissue destruction must be much more rapid. Dr. LEITH MURRAY (Liverpool) had seen two cases of gas gangrene infection, both of which were fatal. The distressing feature he noticed was that the patients were acutely conscious although their bodies were really dead.

Dr. BAILEY (Leeds) had seen a number of cases of retained placenta. He always left the placenta alone in the absence of symptoms. Altogether he had had about thirty cases, and quoted some in which the placenta came away at varying intervals from thirty hours to six days, and one case where the woman would not allow him to examine her or to see the lochia. In this case, to the best of his knowledge, the placenta never came away. She was seen in his surgery two months after her confinement, quite well.

ENTERO-VESICAL FISTULA.

Professor CARLTON OLDFIELD (Leeds) reported two cases of entero-vesical fistula. The first patient was originally seen in 1914. A diagnosis of diverticulitis was then made and a pelvic abscess drained by posterior colpotomy. In 1928 the patient had three attacks of pain at different times, and after the third attack began to pass faeces and flatus from the bladder. This made the speaker still more certain that the condition was diverticulitis. The patient now had so much trouble that something had to be done. No information was obtained from cystoscopy. Abdominal section was performed and very dense adhesions were found. Eventually the bladder, uterus, and sigmoid were separated and a stony hard swelling was found adherent to the uterus and sigmoid. This was eventually separated, leaving a hole in the sigmoid, and a track lined by granulation tissue was discovered leading down to the bladder. The track was scraped and the hole in the sigmoid closed. The patient later developed obstruction, which was relieved by a caecostomy, and thereafter she made a good recovery. The report on the nodule was "typical, caseating, active tuberculosis; some parts of ovary, and plain muscle, are present." Professor Oldfield thought that the original lesion must have been tuberculous salpingitis.

The second case was one in which a vesico-vaginal fistula followed a Wertheim's operation. The fistula was repaired and a few days later urine was being passed per rectum. No further treatment was undertaken for this patient, and she remained quite well. Her only disability was the necessity for frequent bowel actions to pass urine.

RADIUM TREATMENT OF BUCCAL CANCER.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held in Dublin at the Royal College of Physicians on May 26th, with Mr. R. A. STONEY in the chair.

Mr. WALTER C. STEVENSON, in a paper on radium technique, said that unless those who used this powerful agent had suitable apparatus, and fully appreciated the physical properties which govern radiation, disastrous results would follow. This note of warning was necessary in the present boom, when those without previous experience might be tempted to employ this agent. He dealt briefly with the importance of obtaining uniform radiation and efficient treatment without over-dosage, and the risks of stimulating a growth by too small doses. He advocated the closest co-operation between the "radio-surgeon" and the specialist when carrying out surgical procedures in special branches, as in the throat or gynaecological conditions.

Mr. Stevenson showed six patients; in three of these an apparent clinical cure of cancer of the tongue, involving the floor of the mouth, and one of cancer of the lip, had been obtained by inserting six iridio-platinum needles containing 53.93 mg. of radium element, combining this treatment with surface application. A cancer of the tongue, in which a cauliflower growth had already disappeared, had not yet healed, the patient only having been treated about ten days before. A recent case of extensive cancer involving the whole upper lip and mucous membrane of the cheek, was also shown, in which twelve needles, containing 1 mg. of element each, had been employed in three positions, or thirty-six foci, during eighteen days. This patient had so far done remarkably well, all the growth in the lip having disappeared, and most of the growth in the cheek.

The CHAIRMAN said that, although some of the cases shown by Mr. Stevenson could not at present be claimed as cures, others appeared to be clinically cured, though it was not possible to say whether there would be a recurrence later on. In cases of carcinoma of the tongue there was at present a great tendency to recommend radium rather than operation. Operation in these cases entailed considerable risk, and if it was possible to get something which was at least as certain of doing good and of preventing recurrence he thought it should be recommended. When, however, he came across a case of early cancer of the tongue which could be removed by a partial excision of the tongue he did not feel justified in advising radium treatment, as in these cases it was possible to remove the growth at operation without producing any material deformity, and cure could be promised. There was also a certain class of case in which great assistance was derived by either radium treatment or *x*-ray treatment in rendering inoperable cases operable.

Dr. M. HAYES, referring to the complexities of radiotherapy, said that a tremendous amount of damage would be done unless those employing radium treatment would be guided by persons with previous experience of it. The physics of radium should be thoroughly understood by those using it in the treatment of disease. One of the chief dangers was radium burns, but unless the dose had been greatly excessive most of these could be healed by the application of normal saline solution. Referring to the problem of radium therapy *versus* operation, he said that if a malignant condition was operable surgery was preferable to all or any forms of radium treatment. Time alone would settle which was the best method. In cases of cancer of the tongue he thought radium treatment was preferable to operation, as after the treatment the tongue and speech were normal, and there was not the risk of deformity which surgery entailed.

Mr. C. J. MACAULEY said that cases of epithelioma of the lip, whether early or late, benefited by surgery, but as cases of carcinoma of the tongue and floor of the mouth were practically never seen in the early stages they did better by radium treatment. He always prepared such patients for radium treatment by getting any bad teeth removed and excising the glands in the neck; he thought it was a great mistake to treat these cases by radium without carrying out an extensive excision of the glands in the neck beforehand. Operations for cancer of the mouth carried a very high mortality, left the patients very deformed, and did not ensure any better promise of lasting good than radium treatment. He thought that the outlook for these patients was very much better at present than it had ever been before, and that any growth which could not be freely excised should be treated by radium.

Mr. A. CHANCE said that in the present state of knowledge he was convinced that radium treatment was suitable for all cancers of the tongue, except in very advanced

cases, where cure by any treatment was out of the question and the use of radium would discredit its value. The ultimate results of surgery in cancer of the tongue were as bad as they could be, and time alone would show what were the ultimate results to be expected with radium. On the established facts, radium should be the method of choice even in the earliest growths. The toilet of the mouth should be carried out before radium application. To extract a septic stump after radium application was to ask for septicaemia, as the vitality of the surrounding irradiated tissues favoured its development. There were reports in the literature of fatal results so brought about.

TUBERCULOMA IN THE FRONTAL LOBE.

Professor H. F. MOORE and Mr. C. J. MACAULEY showed a boy, aged 15, who, five years prior to his admission to the Mater Misericordiae Hospital, had sustained a head injury with a scalp wound in the left parietal region. Two years later he began to suffer from twitchings of the right side of the face, right eye, and right arm; the twitchings were preceded by an aura of taste, but the boy never lost consciousness. He had an attack while in hospital, and for some time after had considerable difficulty in speech. On examination an irregular defect could be felt over the upper part of the left parietal bone. There was paresis of the right arm with distinct astereognosis. The boy walked with a hemiplegic gait and the abdominal reflex was absent on the right side; Babinski's sign, ankle, and rectus clonus were present. Examination of the eyes revealed double optic neuritis with advancing atrophy, the latter being more advanced in the left eye. The Wassermann reaction was negative. X-ray examination showed convolutional atrophy but no bony depression. A diagnosis was made of a cerebral lesion involving the lower part of the left Rolandic area, possibly post-traumatic, and an operation was performed by Mr. MacAuley. A large scalp flap was turned down over the left fronto-parietal region. There was an irregular linear defect in the upper part of the left parietal bone, through which a bluish membrane presented; the defect was enlarged, the extreme thinness of the skull being noteworthy. The membrane, when incised, proved to be the dura mater, and some fluid escaped under moderate tension. The underlying brain was oedematous with flattened convolutions. Through the soft brain tissue one could palpate a firm nodular mass in the interior of the frontal lobe. The pial vessels were ligatured and the brain was incised. The tumour was then gently enucleated. It weighed 98 grams, and on section proved to be a tuberculoma. The boy made a complete recovery; he has had no twitchings since the operation, and power has remarkably increased in the right arm. Weakness in the internal rectus had now gone and the Babinski reflex was absent.

The CHAIRMAN said that the preliminary symptoms in this case were difficult to explain in view of the pathological findings. It was interesting to note the large size of the tumour and its consistency. Tuberculomas were usually small; as they got bigger they turned into definite abscesses. Mr. W. PEARSON thought the prognosis in this case was exceedingly good, and asked if there had been any urinary trouble. During the war he had seen a large number of frontal lesions, and the cases almost invariably suffered from disturbances of micturition. Mr. A. A. MCCONNELL said it was interesting to see a case in which it was possible to remove the tumour, and to find that such a large tumour turned out to be a tuberculoma. In his experience tuberculomas were rare, and the prognosis in the majority of cases was bad, owing to the presence of multiple tumours and the onset of dissemination. He thought that in the present case the patient would probably continue well; if there was to have been dissemination it would have taken place already.

Mr. MACAULEY, in replying, said he understood that the boy had at one time some nocturnal incontinence, but on admission to hospital this had disappeared.

NON-PARASITIC CYSTS OF THE LIVER.

Mr. F. MORRIN read a paper on non-parasitic cysts of the liver. He reported two cases of polycystic disease of the liver which had occurred in sisters during their third and fourth decade respectively. The family history revealed that the father died of pernicious anaemia, and a sister died at the age of 25 from some obscure abdominal complaint. One case was an abdominal emergency, a ruptured parovarian cyst being found at operation. The liver showed extensive polycystic disease, and, in addition, there were cysts in the transverse mesocolon and a cyst situated below the left kidney. The other patient complained of attacks of right-sided abdominal pain and vomiting. Operation disclosed polycystic disease of the liver and localized inflammatory reaction over some large cysts in the right lobe. In this case functional liver tests which were carried out showed no deviation from the normal. The varieties of cysts met with and the views as to their origin were mentioned. The familial association of the cases reported supported the view that the condition was most probably a developmental anomaly. Reference was made to the great difficulty in diagnosis, owing to the absence of jaundice and freedom from digestive disturbance; functional tests in one of the cases showed that the pigmentary, glycogenic, and excretory function of the liver was unaffected.

The CHAIRMAN said that polycystic disease of the liver and kidneys was of interest from an embryological point of view, and he had always been of opinion that these diseases must be due to some congenital abnormality. The fact that the fluid contained in the cysts was of a more or less non-biliary character suggested that it must be the product of cells not normally found in the liver. Mr. MACAULEY said that he thought a large number of cases of polycystic disease of the kidney were associated with polycystic disease of the liver. He wondered what the subsequent fate of patients with this disease was, and if death ensued from interference with liver function. Dr. A. B. CLERY remarked that Dr. Lindo had suggested that the disease was due to the maldevelopment of mesoblastic tissue in the fourth month of life.

Mr. MORRIN, in replying, said that according to the literature no necropsies had been performed in cases of polycystic disease of the liver except in children, but the oldest patient operated on for the condition was 82. In the great majority of cases the condition did not lead to early death, though the more severe cases died in early life.

RECIPROCAL CONTRACTION OF ANTAGONISTIC MUSCLES.

ON June 13th, at a meeting of the Royal Society, Sir CHARLES SHERRINGTON communicated a paper by Lady Briscoe and Miss Winifred Leyshon on the reciprocal contraction of antagonistic muscles in peripheral preparations—using a flashing neon lamp circuit for the excitation of nerve. It had been shown previously by one of the authors that all types of respiratory movement and different degrees of postural tone in the diaphragm could be accurately reproduced by varying the amplitude of a faradic stimulus. In this paper, illustrated by a cinematograph film, it was for the first time shown that reciprocal contraction of antagonistic muscles could be obtained in peripheral preparations by reciprocal excitation of the nerves of the opposing muscles. The electrical stimulation was carried out by using the regular intermittent discharges of a condenser in a neon tube flashing circuit. These discharges were passed either through a primary coil oscillating between two secondary coils, or through an arrangement of potential dividers, one of which consisted of a conducting fluid into which dipped an oscillating wire. Reciprocal changes in the stimuli were obtained by either of these methods, and it was shown that controlled and co-ordinated rhythmic movements of a limb closely resembling natural movements were produced by the suitable artificial stimulation of cut efferent nerves. If during this controlled rhythmic movement the mechanism producing phasic variation was stopped at any point, the limb remained held in posture. The method of stimulation was thus shown to be adequate for both movement and posture. An analysis of the forces controlling movement showed that the control of relaxation was as important for smooth co-ordination as the control of contraction.

Reviews.

DISEASES OF THE LIVER AND BILIARY TRACT.

THE sixteenth fasciculus—a bulky volume of more than a thousand pages—of the *Nouveau Traité de Médecine*,[1] edited by G. H. ROGER, the late F. WIDAL, and P. J. TEISSIER, is devoted to diseases of the liver and the biliary tract. It gives a well-illustrated account of the subject, with special reference to the many advances achieved by the work of French observers. It is written by thirteen contributors, among whom the late Professor F. Widal's name appears as responsible, with Professor P. Abrami, for the article on jaundice, which occupies a tenth part of the volume, and with Dr. Etienne May for a shorter but very considerable account of spirochaetosis icterohaemorrhagica. The volume opens with a description of the methods of physical examination of the liver by Professor Maurice Villaret and Dr. L. Justin-Besançon, who supply five other articles in the work, including that of 150 pages on the cirrhoses. Their account of the physical examination is accompanied by fifteen admirably clear illustrations, including skiagrams and outlines of orthodiagrams. As an introduction to his description of the symptoms of functional hepatic disorder Professor Marcel Garnier passes in review the functions of the liver, and the tests for hepatic efficiency; in their article on the syndrome of portal hypertension Villaret and Justin-Besançon, who later in the volume write on pylephlebitis, discuss the physiological and anatomical aspects of the hepatic circulation, and utilize much of the senior author's experimental work; the appearances of the collateral circulation in clinical cases are well illustrated by figures. In the article on jaundice the subject of haemolytic jaundice, on which Chauffard and other French writers have done so much, is handled fully and in an attractive manner, and attention is rightly drawn to the work of Aschoff and McNee. In the article on cirrhosis—a most valuable source of reference—the etiological influence of tuberculosis and syphilis is discussed, and whereas the former is regarded as unimportant, great stress is laid on previous syphilitic infection. Arguments against the existence of Hanot's hypertrophic biliary cirrhosis are well set out, and the various forms of Hanot's syndrome are noticed. Professor Legry's article on hepatic syphilis is generously illustrated with plates borrowed from works by the late Professor Maurice Letulle. For the account of hydatid disease the valuable services of Professor F. Dévé of Rouen, who has devoted so much attention to the subject, have fortunately been secured; of the rare alveolar form he accepts as genuine five cases only in France. The article on toxic hepatitis, in which reference to the late Benjamin Moore's work on trinitrotoluene is duly made, deals mainly with the effects of alcohol and chloroform, and two forms of the latter—benign and grave—are described. Diseases of the biliary tract are concisely dealt with by Professor M. Garnier and Dr. R. Prieur. In the section on gall-stones surgical intervention is admitted to be more efficacious than medical means of treatment. The concluding article in this instructive presentation, on perihepatitis and pericholecystic abscess, by Professor Villaret and Dr. Justin-Besançon, is illustrated by fifteen skiagrams.

In a little volume entitled *Chirurgie des Voies Biliaires*[2] Professor SOBRÉ-CASAS of Buenos Aires discusses the results of cholecystostomy and cholecystectomy as usually practised, and describes several original methods in technique. In suitable cases he drains the gall-bladder after ligature of the cystic duct and of the cystic artery, and he finds that the results are superior to those of the ordinary procedures, in that in no case has the operation been followed by death or by any serious complications. In some cases he excises in addition the mucous membrane from the gall-bladder, leaving the outer coats in place. The details of the operative technique are shown in a series of admirable coloured drawings, which make the author's meaning perfectly clear, even without reference to the text. We would strongly recommend this little volume to the attention of all surgeons who are interested in this important branch of their art. It includes an extensive bibliography.

[1] *Nouveau Traité de Médecine.* G. H. Roger, Fernand Widal, P. J. Teissier. Fascicule xvi: Pathologie du Foie et des Voies Biliaires. Paris: Masson et Cie. 1928. (Sup. roy. 8vo, pp. viii + 1048; 20 plates, 153 figures. 125 fr.)

[2] *Chirurgie des Voies Biliaires.* Par C. Sobré-Casas. Préface du Professeur J.-L. Faure. Paris: Masson et Cie. 1928. (6 × 8¼, pp. 119; 142 figures. 35 fr.)

LOOSE-LEAF LIVING SURGERY.

THE *Nelson Loose-Leaf Living Surgery*[3] in eight volumes is produced in a way which makes its appearance a new departure in surgical literature. Most of those who have bought expensive treatises or systems of medicine or surgery have been struck with the appalling rapidity with which they grow old and obsolete, either in part or as a whole. He who has sold his obsolete Ziemssen's cyclopaedia of medicine for 3s. 6d. a hundredweight as waste paper is not easily tempted to invest in another library likely to become rapidly obsolescent. In many cases the symptoms of decay in usefulness are unequally distributed throughout the work, some sections remaining still valuable and authoritative, while others are as good as dead. Struck by such experiences, a number of physicians, in consultation with the publishers of loose-leaf books, combined to bring out a loose-leaf medicine, the success of which has encouraged Messrs. Nelson to bring out the work now under notice. If the expectation of the authors and publishers is fulfilled the epithet "living" will be justified, for the intention is to reject every portion of the work as soon as it becomes obsolete, and to substitute for it a new and up-to-date section, which will be supplied by the publishers as soon as it becomes necessary. In this way the book, like a living organism, should be constantly extruding worn-out parts and acquiring new ones in their place.

The list of contributors to the eight volumes is a guarantee of the value of their contents. It comprises more than seventy names, nearly all of which are those of American and Canadian surgeons, only five being European, and none of those British. The editor-in-chief, Dr. ALLEN O. WHIPPLE of New York, has been assisted by an advisory board of nine surgeons, among which the name of Professor George W. Crile may be taken as an indication of their quality. The first essay—on the history of surgery, by Dr. Alfred Brown—is probably the one most likely to be permanent and to survive the operations of the loose-leaf binder; and when the owner of a copy of this system is purging it of obsolete stuff, as in the words of Homer, quoted by Dr. Brown, "Through the thick files he darts his searching eyes," he will spare this fascinating essay.

It is not possible in a general review to make any attempt to criticize such a work as this. Its scale may be estimated from the bare statement that 269 octavo pages are devoted to the consideration of fractures and dislocations, and that over 100 pages are taken up with the surgery of the hand alone, giving to this region an importance which the gravity of hand lesions deserves, but which they very seldom receive. The illustrations are worthy of their subjects, and many are in colour. We wish Messrs. Thomas Nelson and Sons success in the bold adventure which they have undertaken in their revolutionary production.

[3] *Nelson Loose-Leaf Living Surgery.* Allen O. Whipple, M.D., Editor-in-Chief; Fordyce B. St. John, M.D., Associate Editor. Vols. i to viii. New York, Edinburgh, London: T. Nelson and Sons. 1928. (7½ × 7¼, pp. xxii + 685; illustrated.)

TEXTBOOKS OF BACTERIOLOGY.

THE requirements of those seeking a handbook of general microbiology will be well suited by TANNER'S *Bacteriology*.[4] Its province is much wider than that of bacteriology from the purely medical aspect, for it essays to cover the whole field of the subject. And although there are sections concerning human ailments, they take but a minor part in the book, so small indeed as to be of little value to the medical man, as may be judged by the brevity of the paragraphs touching diphtheria and tuberculosis; the Schick and Widal tests are described, but there is no

[4] *Bacteriology.* By Fred Wilbur Tanner. New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1928. (Med. 8vo, pp. xvii + 548; 138 figures. 22s. 6d. net.)

mention of the serological reactions in syphilis. Chapters of a general nature describe with some completeness the features of the biology of micro-organisms, such as their morphology and chemistry, their reactions to physical and chemical agents, and their interrelations with each other, with plants, and with animals. Students of public health will find interesting and instructive chapters dealing with the bacteriology governing questions of food preservation, the purity of water, and sewage disposal. There are abundant details of a practical kind regarding the handling of milk and the preparation of butter and cheese, and many points are discussed which concern normal and diseased foods. There is, finally, a description of the diseases of plants due to bacteria. The classification adopted and detailed with great completeness is that of the Society of American Bacteriologists, and particularly Bergey's modification of it, and there is also an outline for a course of lectures on the subject the book deals with. The English purist will find few Americanisms to cavil at, but he will not be alone in his surprise at the apparent redundancy in a glossary of such a word as health, defined naively as a state of well-being in body and mind, while the word bacteriophage is wanting. The definition of the word "homologous" as "having the same function" is dubious. The volume is sufficiently illustrated and indexed; the references, which are many, are chiefly to American literature. The history of the subject is not neglected and some biographical data are included. But it seems unnecessary, in discussing theories of disease, to do more than mention the demonic hypothesis; and it is remarkable that in describing treatment of disease by bacterins (a synonym for prophylactic vaccines) the author should ignore the pioneer work of Wright. Misprints are few, but "attention" for "attenuation" catches the eye; the names of Negri and Metchnikoff are incorrectly spelt. For the student of bacteriology as a pure science Tanner's book has many merits, although it will hardly meet the requirements of medical men in general, nor indeed does it address itself to them.

The appearance of a second edition of BIGGER'S *Handbook of Bacteriology*[5] within a few years of the original publication is the index of a popularity that is likely to continue. The literature of bacteriology is constantly and rapidly increasing, and when an author, sifting through it and holding fast to that which is good, combines the result with his own experience he performs a real service to medicine. Written in a style which is at once pleasing and concise, this book is very full of the information valued by the student and also appreciated by those working at closer quarters with bacteriology. About half of the pages are concerned with general matters, including the preparation of media, immunity, and serological technique. There follows an account of the classification of bacteria, and the remainder of the volume deals with the subject from the systematic point of view. This new edition has been largely rewritten and amplified. The matter is of uniform excellence and a due balance is maintained between theory and practice. The account of vaccine therapy and the chapter on tuberculosis are especially praiseworthy. Important and tried methods of investigation are adequately described (the Levaditi method for staining spirochaetes rather shortly, however), and there is a sufficiency of illustration and indexing, though it is unfortunate that the index of coloured plates errs in the numbering of the pages referred to. The book is certain to retain its good name as a manual.

SCIENCE, PHILOSOPHY, AND RELIGION.

FROM time to time men eminent for their scientific attainments attempt to reconcile the discoveries of science with the tenets of religion. Thus Sir Lauder Brunton once wrote a book to explain the miracles of the Bible, such as the parting of the waters of the Red Sea, and the halting of the sun for the benefit of Joshua, in the light of scientific observation. Modern study of psychology has enabled Dr. WILLIAM BROWN to approach the subject in a more philosophic, and perhaps less unconvincing, spirit, and in *Science and Personality*[6] he has presented a synopsis of views which he developed in lectures delivered in the United States in 1928, on the Dwight H. Terry Foundation.

Dr. Brown divides the chief mental attitudes towards existence into the logical, the æsthetic, the ethical, and the religious. The first three are concerned with the true, the beautiful, and the good. The last is the attitude of the individual towards the universe as something upon which he completely depends and to which he attaches ultimate value. To the universe man adopts an attitude of worship, looking upon it as a value absolute in nature, not relative. In developing his thesis Dr. Brown seems to adhere rather closely to the doctrines of Plato. His definition of religion is perhaps nebulous. Such a statement as "philosophy may be made a religion, and in so far as it is made a religion it is more than mere philosophy," suggests the need for better defined terms. He assumes that the individual comes into the world with the power of discovering values; that he has a desire for the conservation of the three ultimate values of truth, goodness, and beauty; and that his mind has a non-temporal aspect, in that it has the power of forming ideals of knowledge, of beauty, and of goodness, and of considering the extent to which actual experience falls short of these ideals. Religion, he says, corresponds to an adequate sense of true values. A system of sentiments is built up within one all-inclusive sentiment; and this master sentiment will be centred round one supreme object, which, Dr. Brown says, must be the universe as a perfected system, as the full realization of the good, the beautiful, and the true. He believes that in the advance of science religion is needed more and more to keep us from reaching views which are a mere caricature of existence, and are out of harmony with our deepest aspirations and feelings.

Dr. Brown ranges over a wide area of science, pseudo-science, and philosophy. He discourses on relativity and the quantum theory in a manner which leads Sir Oliver Lodge, in a foreword to the book, to describe him as an unusually competent amateur. In biology, which he regards as the most fundamental physical science, he explains the doctrine of emergent evolution. He believes that science leads on to philosophy and metaphysics. He connects mysticism with an immediate experience of union with the spiritual universe; and distinguishes personality from individuality in that the former carries with it an element of universality. He pleads for the view that dissociation is just as necessary in the mind as association; and that it only becomes pathological when there is failure of the normal process of dissociation. Dr. Brown disagrees with the extreme views of the Freudians, and the overemphasis of the sex factor. On spiritual healing he adopts a non-committal attitude, as is perhaps natural in one who sat on the Archbishop of Canterbury's committee. He seems, however, to lean to a belief in telepathy, although he says that it is something about whose conditions we know next to nothing. He includes in his book two chapters on some investigations he has made into psychical research through a medium named Mrs. Osborne Leonard. He seems to have convinced himself, from various happenings at the séances, that there was "something in it." But another case in which he investigated the clairvoyant capacity of a shell-shocked soldier makes us, we are bound to confess, a little sceptical of Dr. Brown's valuation of results. Sixteen observations by the clairvoyant soldier were compared with extracts from letters received from his wife and daughter. Dr. Brown finds about 50 per cent. correspondence. Careful examination of the patient's statements and the information extracted from the letters suggests that a reckoning of 25 per cent. correspondence would be more than generous.

Interesting though the book is, it leaves in us a feeling that the scientific philosopher is inclined to magnify the position of man in the universe, forgetting that most of the human characteristics upon which we pride ourselves may not, after all, be very far removed from those of other animals; and that the investigation of the pseudo-sciences needs a kind of judgement which the scientific philosopher does not always possess.

[5] *Handbook of Bacteriology.* By Joseph W. Bigger, M.D., Sc.D., F.R.C.P.I., D.P.H., M.R.I.A. Second edition. London: Baillière, Tindall and Cox. 1929. (5¼ × 8¼, pp. xvi+452; 82 figures, 5 plates. 12s. 6d. net.)

[6] *Science and Personality.* By William Brown, M.D.Oxon., D.Sc.Lond. With a foreword by Sir Oliver Lodge, D.Sc., F.R.S. London: Milford, Oxford University Press. 1929. (Demy 8vo, pp. viii + 258. 12s. 6d. net.)

THE ACTIONS OF DRUGS.

ELEMENTS of the General and Special use of Medicaments,[7] by Professor PAUL TRENDELENBURG, is a small volume in which the author has set out extremely clearly the outstanding facts about the actions of the more important drugs, and his book resembles in some respects the volume *Useful Drugs*, which is published by the American Medical Association. Professor Trendelenburg abstains from all discussion on theories as to the mode of action of drugs; moreover, he makes no attempt to describe all drugs in modern use, the entry of capitalism into drug production having, he points out, resulted in the commercial exploitation of countless new remedies. The number of new drugs alone is sufficient to make an estimation of their relative value difficult; accurate judgement is rendered almost impossible by the manner of their advertisement. Professor Trendelenburg's method is to give in relation to each important drug a summary of its history, its physical and chemical characters, its fate in the body, indications for its use, its side actions and dangers, the mode of its administration, and a valuable but unusual feature, its price. The work as a whole forms an extremely useful textbook for students. Although the statements are condensed and dogmatic they are remarkably accurate, and the author's wide knowledge of his subject makes his opinions of great interest, even though they are presented in a very summary form.

NOTES ON BOOKS.

DR. KAHN'S textbook on *The Kahn Test*[8] gives an account of the use of precipitation phenomena in the diagnosis of syphilis, and a detailed discussion of the technical aspects of the Kahn test. It has been written for the use of laboratory workers, and the author expresses the hope that it will also be read by physicians employing the Kahn test in their professional work. The terminology of colloid chemistry is employed throughout; the book is clearly written, and may be recommended to those interested in the subject with which it deals.

It is not surprising that the *Essentials of Infant Feeding*,[9] written by Dr. E. A. BARTON of the Child Welfare Department of University College Hospital, has passed into a second edition, for it embodies scientific knowledge with the results of much experience and is full of sound advice expressed in clear language. This edition has been carefully revised in accordance with the advance of knowledge.

We have received from Dr. JEHANGIR J. CURSETJI of Bombay a copy of a pamphlet published by him under the title *Sub-Standard Lives and their Assessment in Life Assurance*. It consists of a series of articles contributed originally to an American periodical, and is intended as a companion to the author's *Pocket Guide to Medical Life Assurance*, of which a third edition is now in the press.

Radiation in Chemistry,[10] by R. ALAN MORTON, gives an account of the way in which radiations of all sorts—those of light, heat, and x rays in particular—find practical applications in industry and in scientific investigations of all sorts. The greater part of the volume is devoted to the chemical activities of light rays, and contains sections dealing with light sources and the measurement of the intensity of light, photo-chemical reactions and their applications in the photographic and allied industries, photo-electricity and luminescence, biochemistry, and light. The last section treats of x rays in chemical theory and practice. The author writes clearly, and has brought together a large amount of interesting information, quoting a great number of books and original papers as the prime sources of his volume. It is intended for the use of technologists in the first instance, but should appeal also to all readers interested in the manifold applications of radiations in art, industry, and therapy. Indeed, the author thinks it right to sound a warning note in his account of light therapy, and remarks on the "tendency, which has recently become apparent, to exaggerate the curative value of light. Actinotherapy opens up great possibilities for effective co-operation between chemistry and medicine, but investigation is much more necessary than propaganda; until we know more than at present caution is advisable, lest light therapy should suffer a great reaction and fall into the disrepute which overtakes panaceas."

Physics in the Food Industry,[11] by Sir WILLIAM HARDY, is one of a series of lectures dealing with the application of physics in industrial processes. The preservation of food by cold storage, which is the principal theme of the lecture, is a very vital commercial problem, and the ingenuity expended in solving it makes the subject one of general interest. When speaking of the freezing of meat the lecturer explains that if the frozen food is to remain palatable the chemical breakdown processes taking place after it has been thawed must be very like those in freshly killed meat. When the beef is frozen on a commercial scale this ideal is not achieved, since the ice phase which separates out is never completely reabsorbed on thawing, and thus we have unpalatable, dripping meat. By a most interesting series of experiments it has been shown that the injury which occurs is the irreversible dehydration of the colloidal systems of the muscle. If the meat is frozen at a higher temperature, and less ice is separated, the process is reversible and the water reabsorbed on thawing. The breakdown processes then proceed as they would in fresh beef. An illustration of this principle which should be of particular interest to physiologists was given by means of experiments on the frog's sartorius muscle. In this case the responsiveness of the muscle stimuli was used as an index of its normality. It was found that muscles frozen at a temperature higher than $-2°$ C. were still alive after thawing, whereas those frozen at $-2°$ C. or below were dead. A muscle which had had 78 per cent. of its water removed would freeze at about $-2°$ C., and it was thought possible that the irreversible change resulting in the death of the muscle at $-2°$ C. might be due to separation of 78 per cent. of its water as ice. Drying experiments were undertaken which showed that muscles could have 77.5 per cent. of their water removed, and, shrivelled and dead though they naturally appeared to be, could recover when placed in saline solution, reabsorb water, and become more capable of responding to stimuli. If, however, 78 per cent. of their water was removed the process had become irreversible, and they were in fact dead. It is hardly believable that this striking physiological confirmation of the physical theory of dehydration of the muscle colloids can be due to coincidence. In conclusion it should be said that this lecture, despite the amount of information contained in it, is both brief and readable.

The little book on visceroptosis by Dr. CHAUVOIS, under the title of *Les Dessanglés* [ungirthed] *du Ventre*,[12] gives a short account of the subject, and recommends physiotherapeutic measures in cases capable of correction, and belts, and especially a pneumatic pad, for incurable cases, which may thereby be relieved.

[7] *Grundlagen der allgemeinen und speziellen Arzneiverordnung.* Von Paul Trendelenburg. Zweite, verbesserte Auflage. Leipzig: F. C. W. Vogel. 1929. (Med. 8vo, pp. iv + 288. M.16.)

[8] *The Kahn Test.* By R. L. Kahn, M.S., Sc.D. London: Baillière, Tindall and Cox. (Med. 8vo, pp. xii + 201; 7 plates, 35 tables. 18s. net.)

[9] *Essentials of Infant Feeding.* By E. A. Barton. Second edition. London: H. K. Lewis and Co., Ltd. 1929. (Cr. 8vo, pp. viii + 80. 3s. 6d. net.)

[10] *Radiation in Chemistry.* By R. Alan Morton, B.Sc., Ph.D., F.I.C. Industrial Chemistry Series. London: Baillière, Tindall and Cox. 1928. (Demy 8vo, pp. xvi + 234; 44 figures. 15s. net.)

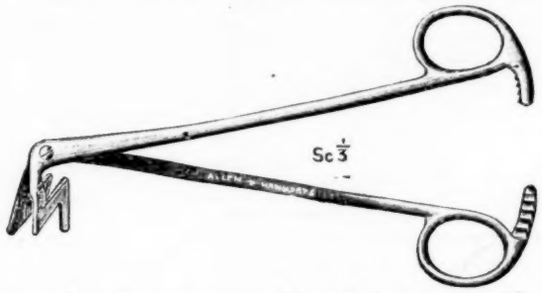
[11] *Physics in the Food Industry.* By Sir William Hardy, M.A., F.R.S. London: Institute of Physics. 1929. (6 × 9¾, pp. 21; 10 figures. 1s. net.)

[12] *Les Dessanglés du Ventre.* Par L. Chauvois. Deuxième édition. Paris: N. Maloine. 1928. (5¼ × 7¾, pp. 192; 110 figures, 7 plates. 18 fr.)

PREPARATIONS AND APPLIANCES.

PERITONEAL TETRA-TOWEL FORCEPS.

MR. W. McK. H. MCCULLAGH, *D.S.O., M.C.*, F.R.C.S. (London, W. 1), writes: The use of tetra cloths is now regarded as almost an essential in the technique of abdominal operations. The difficulty is suitable forceps. The forceps shown in the



accompanying figure overcomes the objections of many in use. It lies flat under the tetra cloth, as it has an abdominal curve. Its bite is also horizontal, and dips vertically into the wound over the skin edge. The fixation of the towel to the peritoneum is broad, and does not damage or tear the peritoneum. The instrument is sufficiently large to prevent possible loss in the abdomen. Two on each side are required for the average wound; the proximal two are attached by the operator with the assistant holding the peritoneal edge and towel edge in apposition, and the distal two by the assistant. They are of particular help in Caesarean sections. The forceps are made by Allen and Hanburys Limited.